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PORTLAND HARBOR RI/FS  
**TECHNICAL MEMORANDUM**  
FINALIZATION OF ROUND 1 CHLORINATED PESTICIDE DATA

May 7, 2004

**Prepared for:**  
The Lower Willamette Group

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## Introduction

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Columbia Analytical Services (CAS) conducted the Round 1 chlorinated pesticide analyses of tissue samples using U.S. Environmental Protection Agency (EPA) Method 8081A, as required by the EPA-approved Round 1 quality assurance project plan (QAPP). Analysis by EPA Method 8081A, a standard gas chromatograph (GC) technique for the analysis of chlorinated pesticides in environmental samples, employs an electron capture detector (ECD). The ECD is sensitive to chlorinated compounds (e.g., chlorinated pesticides, polychlorinated biphenyls) and allows for the identification and quantitation of target compounds at method reporting limits (MRLs) in the low  $\mu\text{g/kg}$  range.

The Round 1 chlorinated pesticide data were validated by the Lower Willamette Group's (LWG) subcontractor, Laboratory Data Consultants Inc. (LDC), as required in the Round 1 QAPP. Data qualifiers were assigned to selected results based on the laboratory quality control results. The precision and accuracy of the chlorinated pesticide results met the data quality objectives specified in the QAPP and the GC/ECD chlorinated pesticide data were deemed acceptable, as qualified.

Polychlorinated biphenyls (PCBs) are a known interferent in the chlorinated pesticide analysis by GC/ECD (EPA Method 8081A). In the laboratory case narratives for the Round 1 data packages, CAS noted matrix interferences for some of the samples. When reviewing the chromatograms for the chlorinated pesticide analysis, LWG and EPA project chemists noted evidence of potential interference in the chlorinated pesticide analysis from the presence of PCBs in selected samples. EPA requested reanalysis of selected Round 1 tissue samples because of possible false positive or biased high chlorinated pesticide results due to the potential interference of PCBs in the chlorinated pesticide analysis. Additional review of the GC/ECD chromatograms for chlorinated pesticides was conducted by LWG to assess the degree of PCB interference for the chlorinated pesticide analysis.

Under LWG's direction, CAS reanalyzed selected Round 1 samples by gas chromatography/mass spectrometry (GC/MS) using a mass spectrometer equipped with an ion trap (EPA Method 8270C), which increased the sensitivity of the instrument. This methodology is not typically used for tissue analysis; however, the method was developed by CAS for the Round 1 tissue samples. Using this GC/MS ion trap method allowed separation of the chlorinated pesticide target parameters from the PCB interferences while attaining detection limits below those commonly achieved by standard GC/MS methodology.

The purpose of this technical memorandum is to provide LWG's recommendations for selection of chlorinated pesticide results reported in the project database. This memorandum summarizes the data quality of the chlorinated pesticide results analyzed by GC/MS ion trap, the data qualifiers assigned to the results for both methods, and the criteria for selection of the final result.

## **Round 1 Analysis for Chlorinated Pesticides**

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The results of the chlorinated pesticide analysis conducted by CAS for the Round 1 tissue samples were reported from March through May of 2003. A total of 129 tissue samples were analyzed for chlorinated pesticides by GC/ECD for Round 1.

### **GC/ECD ANALYSIS**

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The Round 1 QAPP stipulated that chlorinated pesticide analyses in tissue samples be conducted using EPA Method 8081A. Prior to extraction of the tissue samples, CAS performed a screening level extraction and analysis to determine the appropriate mass of sample to use for extraction to ensure that the tissue sample extracts did not require excessive dilution. Based on the screening results, a smaller mass of tissue than required by the method and laboratory standard operating procedure (SOP) was extracted for selected samples. The tissue sample extracts were subjected to gel permeation chromatography (GPC) and Florisil cleanup prior to instrumental analysis by GC/ECD. The analyses were conducted in accordance with the requirements in the Round 1 QAPP without additional method modifications.

### **GC/MS ION TRAP REANALYSIS**

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CAS conducted the GC/MS analysis by EPA Method 8270C in full-scan mode using a GC/MS equipped with an ion trap. The target parameter list for the EPA Method 8270C reanalysis was the same as the list for Method 8081A, excluding alpha-endosulfan and alpha-chlordane (which were not recovered by MS) and the multi-component pesticide toxaphene. CAS used 10 grams of tissue sample for extraction. The extracts were subjected to GPC and Florisil cleanups to remove interferences and non-target compounds. Five of the smallmouth bass sample extracts were subjected to acid cleanup because of matrix interference that was not resolved by GPC and Florisil cleanup.

Prior to conducting the analysis, CAS performed a method detection limit (MDL) study in a tissue matrix for the chlorinated pesticide target parameters using the GC/MS ion trap instrument. The MDLs were typically between 5-10 µg/kg for the target analytes. The method reporting limit (MRL) for the target parameters was 25 µg/kg for all parameters, except oxychlordane, trans-nonachlor, dieldrin, and endrin, which had MRLs of 50 µg/kg.

Samples selected for analysis by GC/MS with ion trap included all samples with a reported concentration of 100 µg/kg or greater for any one of the DDT isomers and metabolites, as measured by GC/ECD. A total of 45 samples were selected on this basis. Additional samples with high PCB concentrations relative to the DDT isomers and metabolites were selected for analysis. These samples were selected by calculating the ratio of total PCBs to DDT isomers and metabolites. Samples with a PCB/DDT ratio of 10 or higher and a concentration of DDT isomers and metabolites

of 10 to 100 µg/kg were selected for analysis. Eight additional samples were selected for analysis based on the PCB/DDT isomer and metabolite ratio. Sample LWG01FZ0609TSBCWBC20 was added to the sample list because the concentration of 4,4'-DDE was sufficiently high (95 µg/kg) and because no black crappie sample was initially included in the sample list. Sample LWG0108R001TSSPWBC00 was analyzed in duplicate, resulting in a total of 55 samples selected for reanalysis. The GC/MS ion trap results are included in Table A1 (Attachment A) in the columns labeled SW8270C.

## Data Evaluation

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### VALIDATION OF GC/MS ION TRAP DATA

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The GC/MS ion trap data were validated for the LWG by Laboratory Data Consultants Inc. (LDC), the data validation subcontractor that validated the previously generated Round 1 data. The validation of the GC/MS ion trap data was conducted in accordance with the data validation procedure outlined in the Round 1 QAPP and *USEPA Contract Laboratory Program National Functional Guidelines for Organic Review* (U.S. EPA 1999), with modifications to accommodate the analysis of chlorinated pesticide compounds by GC/MS. Selected results and reporting limits were qualified as estimated (assigned J or UJ qualifiers) during data validation because of exceedance of the control limits for continuing calibration (Endrin) and the internal standard area (multiple analytes in one peamouth sample). Qualifier assignments are summarized in Table 1. None of the GC/MS results were rejected during LDC's validation process. The GC/MS ion trap data were deemed acceptable, as qualified, and were considered valid for use for the project.

### QUALIFICATION OF GC/ECD DATA

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All of the organochlorine pesticide data were validated by LDC under LWG's direction in 2003 in accordance with requirements provided in the QAPP. At EPA's request, LWG completed an additional review of the GC/ECD chromatograms for pesticides in all of the tissue samples. Assignment of data qualifiers was based on the levels of background signal fluctuations or interferences relative to the analyte signal. The degree of interference was sample-specific and was attributed to the presence of PCBs in the samples or to components of the tissue matrix, or both. The following qualifiers were applied to the data:

**N qualifier**— The analyte is tentatively identified. The associated result may be a false positive. A similar response was obtained on both the primary column and the confirmation column. Non-target peaks of similar or greater magnitude were also present. The identification was not judged to be definitive.

**NJ qualifier**— The analyte is tentatively identified and the concentration is an estimate. The associated result is likely to be a false positive. Peaks were present on

both columns, but the difference in response was greater than a relative percent difference (RPD) of 40. The identification was not definitive.

**J qualifier**—The associated result is an estimate. The J qualifier was applied when the peaks on both columns were clearly greater than the background signal. In addition, the background signal may have contributed to the peak and resulted in a positive bias, or the results on the two columns did not agree within 40 RPD.

**U qualifier**—The analyte was not detected. Results were restated as undetected in several cases when the peaks could not be distinguished from background signal. A J qualifier was additionally applied if the reporting limit was an estimate.

In addition, the value reported for undetected pesticides was changed from the MDL to the MRL. MDLs are determined using a clean sample matrix. The background signal in all of the Round 1 tissue samples was too high to support the use of the MDL as a reporting limit for chlorinated pesticides. The GC/ECD results and data validation qualifiers for the Round 1 tissue samples are included in Tables A1 and A2.

#### **COMPARABILITY OF GC/ECD AND GC/MS ION TRAP RESULTS**

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Chlorinated pesticide analysis by GC/ECD is more sensitive than analysis by GC/MS. For GC/ECD analysis of the Round 1 tissue samples, the MDLs for the pesticide compounds were in the 0.06-0.2 µg/kg range, and the MRLs were typically in the 1-4 µg/kg range for most target parameters. The MDLs and MRLs varied based on the mass of sample extracted for analysis. Analysis of chlorinated pesticides by GC/MS is more selective because PCB interference can be resolved by the MS detector and significant matrix interference was not present for most Round 1 tissue samples. (NOTE: Significant matrix interference encountered for five of the Round 1 smallmouth bass samples is discussed further below.) However, MDLs by GC/MS are higher, in the 5-10 µg/kg range for most target compounds, and MRLs are 25 µg/kg for most analytes and 50 µg/kg for selected analytes. Based on the inter-method and inter-sample variability inherent in the reanalysis, variability between the GC/ECD and GC/MS results was expected. Beyond differences in the data that resulted from the inherent differences and strengths of the two methods (i.e., the greater specificity of the GC/MS-ion trap method and the greater sensitivity of the GC/ECD method), the GC/ECD and GC/MS data were comparable for most analytes. The exceptions are identified below.

The comparability of the results by both methods was assessed by calculating the RPD of the results by both methods (see Table A1). A control limit of 50 RPD is recommended by the Puget Sound Estuary Program and the Puget Sound Ambient Monitoring Program (PSEP 1997, Appendix C) for analytical precision for organic analyses. This control limit applies to matrix spike duplicate samples analyzed by the same method in the same sample batch and is not intended to account for inter-

method variability. Because there is no standard control limit for inter-method comparison of results, an RPD of 50 was established as a conservative target control limit for detected results greater than 5 times the reporting limit by both methods. Greater variability is expected for results within 5-10 times the reporting limit (i.e., the MDL for GC/MS-ion trap results and the MRL for GC/ECD results) because of the increased variability of results near the reporting limit. If the RPD exceeds 50 and either of the associated results is qualified N or NJ, which indicates the associated result may be a false positive, further evaluation of the RPD between the results was not performed.

Detected results greater than 5 times the reporting limit that were not tentatively identified (i.e., were not assigned an N qualifier) were reported for 2,4'- and 4,4'-DDD, DDE, and DDT. The results for the remaining compounds were consistently undetected by one or both methods, detected at concentrations less than 5 times the reporting limit, or qualified as tentatively identified (assigned an N qualifier), and further evaluation of the comparability was not required. Selection criteria for reporting of the chlorinated pesticide results for these compounds are provided below.

The comparability of 2,4'- and 4,4'-DDD, DDE, and DDT, when detected, varied by compound. For 2,4'-DDE and 2,4'-DDD, all but six pairs of results were undetected by one or both methods or were qualified as tentatively identified (N or NJ qualifiers applied) (see Table A1). The single detected result by both methods for 2,4'-DDE, reported without an N qualifier, was comparable, as indicated by the low RPD (RPD = 8). For 2,4'-DDD, there were five results detected by both methods, reported without an N qualifier (Table A1). Three of the five detected results had RPDs less than 50, indicating acceptable precision between methods. One pair of detected results had an RPD of 70, which exceeded the target of 50, but was considered acceptable given that the results were attained using different sample aliquots and laboratory methods. One pair of detected results had an RPD of 119; however, the ECD result for this pair was qualified as estimated, which indicated the associated concentration may be biased high or low, causing an exceedance of the target control limit for the RPD between results.

For 4,4'-DDD, there were seven results detected by both methods reported without an N qualifier with RPDs greater than 50 (Table A1). Four pairs of detected results had RPDs between 53 and 78, which exceeded the target of 50, but were considered acceptable given that the results were attained using different sample aliquots and laboratory methods. Three pairs of detected results had RPDs of 51, 52, and 80; however, the ECD results for these pairs were qualified as estimated, which indicated the associated concentration may be biased high or low, causing an exceedance of the target control limit for the RPD between results.

The target compound 4,4'-DDE was detected frequently by both methods at concentrations greater than 5 times the MDL. The results for 4,4'-DDE were comparable at all concentration ranges with no systematic bias, as indicated by

positive and negative RPDs less than 50 for 49 of 55 samples. For the six samples where the RPD exceeded 50, the result for one or both methods was undetected, or qualified as tentatively identified (assigned a N qualifier), or estimated (assigned a J qualifier) where greater variability is expected.

The DDT results (2,4' and 4,4' isomers) by both methods varied more than the 4,4'-DDE results, and the GC/ECD results for the DDT isomers were consistently biased high in comparison with the GC/MS results. The 2,4'-DDT and 4,4'-DDT results were comparable for selected samples ( $RPD \leq 50$ ); however, many of the results had RPDs greater than 100. For a large number of samples with RPDs greater than 50, there appears to be a correlation between the total PCB Aroclor results compared to the difference of the DDT results by each method (Figure 1). This suggests that selected DDT results ( $RPD > 50$ ) from the GC/ECD analysis may be biased high due to interference from the PCB Aroclors. Because of the potential false positive results, five results for 2,4'-DDT and 42 results for 4,4'-DDT reported by GC/ECD were additionally qualified as tentatively identified (an N qualifier was applied) when the RPD was greater than 50. Results were reported in the database according to the selection criteria provided below.

### **Recommendations for Selection of Results for Round 1**

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Of the two methods used to analyze for pesticides, GC/ECD provides greater sensitivity and GC/MS provides greater selectivity. In order to obtain the greatest benefit from each method, data were selected for reporting based on their detection status and qualification status. A set of rules was developed to select which result to report for each sample, as described below:

1. The analyte is not detected by either method: Report the lowest reporting limit.
2. The analyte is detected by GC/ECD but undetected by GC/MS-ion trap: Evaluate the qualifiers and the magnitude of the analyte concentration (GC/ECD) with respect to the reporting limit (GC/MS-ion trap).
  - a. The GC/ECD result is qualified N or NJ: Report the GC/MS-ion trap reporting limit.
  - b. The GC/ECD result is higher than the GC/MS-ion trap reporting limit and is not qualified N or NJ: Report the average of the GC/ECD result and the GC/MS-ion trap reporting limit without a "U" (i.e., the analyte is reported as detected).
  - c. The GC/ECD result is lower than the GC/MS-ion trap reporting limit and is not qualified N or NJ: Report the GC/ECD result.
3. The analyte is undetected by GC/ECD but detected by GC/MS-ion trap: Evaluate the magnitude of the analyte concentration (GC/MS-ion trap) with respect to the reporting limit (GC/ECD).
  - a. The GC/ECD reporting limit is higher than the GC/MS-ion trap result: Report the GC/MS-ion trap result.

- b. The GC/ECD reporting limit is lower than the GC/MS-ion trap result: Report the average of the GC/ECD reporting limit and the GC/MS-ion trap result without a "U" (i.e., the analyte is reported as detected).
4. The analyte is detected by both methods: Evaluate the qualifiers.
  - a. The GC/ECD result is qualified N or NJ: Report the GC/MS-ion trap result.
  - b. Either or both results are qualified J or unqualified: Report the average of the results for GC/ECD and GC/MS-ion trap; apply a J qualifier if one or both results are J-qualified.

The selected data in Table A1 are provided in bold font. If the results will be averaged, both results are provided in bold font.

Matrix interference that resulted in elevated reporting limits for many of the target chlorinated pesticide compounds was encountered for five of the smallmouth bass samples in the Method 8270C analysis. To resolve this interference, these five sample extracts were subjected to acid cleanup. Table 2 summarizes the results prior to and after acid cleanup for the affected samples. Selected target compounds (i.e., beta-endosulfan, dieldrin, endosulfan sulfate, endrin, endrin aldehyde, endrin ketone, and methoxychlor), were not recovered after acid cleanup, as indicated by the recoveries of these compounds in the laboratory quality control samples, so results for these compounds from Method 8270C will be reported from the extract prior to acid cleanup with an elevated reporting limit. The remaining target compounds (Table 3) were successfully recovered from the acid extract, and the results from the acid cleanup extract were evaluated against the selection criteria.

## **Confirmation of Elevated Results**

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As requested in EPA's October 23, 2003 data validation report and as discussed at a November 25, 2003 meeting attended by LWG and EPA chemists, Analytical Resources Inc. (ARI) evaluated the GC/MS chromatograms generated during the semivolatile organic compound (SVOC) analysis, to confirm the presence of 4,4'-DDT in two tissue samples (LWG0107R006TSSPWBC00 and LWG0108R001TSSPWBC00). These samples had concentrations in the part per million range from the original GC/ECD chlorinated pesticide analysis (see Table 3). The GC/MS analysis confirmed the presence and concentrations of 4,4'-DDT, 4,4'-DDD, and 4,4'-DDE in sample LWG0107R006TSSPWBC00 (see Table 3). The concentrations of 4,4'-DDD and 4,4'-DDE in sample LWG0107R006TSSPWBC00 are considered estimated because these compounds were not included in the calibration curve. ARI included 4,4'-DDT in the SVOC calibration for the purpose of evaluating breakdown at the injector so the 4,4'-DDT results were not reported as estimated.

ARI did not detect 4,4'-DDT, 4,4'-DDD, or 4,4'-DDE in the GC/MS evaluation of sample LWG0108R001TSSPWBC00. Therefore, reanalysis of this sample by CAS by EPA Methods 8081A and 8270C with selected ion monitoring (SIM) was



performed in December 2003. CAS reanalyzed sample aliquots from the same sample jar as was used for the original analysis by Method 8081A. The concentration of 4,4'-DDT reported from the reanalysis by EPA 8081A (54 µg/kg) was significantly lower than the initial analysis. The reanalysis results are included on Table 3. CAS also analyzed an additional aliquot of the sample for 2,4'-DDT and 4,4'-DDT by GC/MS using Method 8270C with SIM. Neither 2,4'-DDT or 4,4'-DDT was detected at a reporting limit of 200 µg/kg (Table 3) from the GC/MS analysis.

Reanalysis results for sample LWG0108R001TSSPWBC00, conducted in December 2003, were generated from a total of seven aliquots by two analytical methods: ARI GC/MS results from the SVOC extract (EPA Method 8270C); three aliquots reanalyzed by CAS by EPA Method 8081A (sample, matrix spike, matrix spike duplicate); and three aliquots reanalyzed by CAS by EPA Method 8270C SIM (sample, matrix spike, matrix spike duplicate). The reproducibility of the results from these seven aliquots was acceptable, and none of the aliquots exhibited an elevated concentration similar to the original analysis.

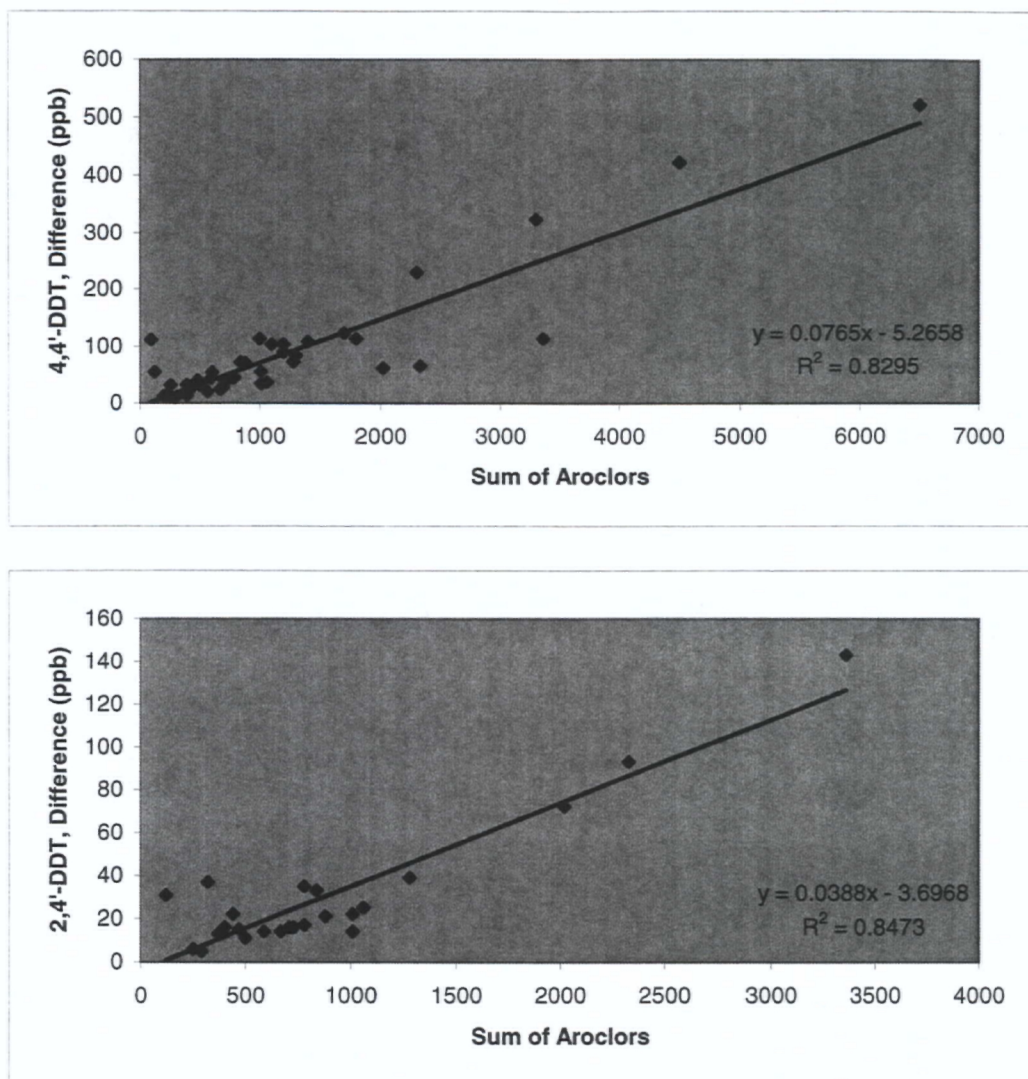
These two tissue samples were included in the samples selected for GC/MS reanalysis, and sample LWG0108R001TSSPWBC00 was analyzed in duplicate by GC/MS. For sample LWG0107R006TSSPWBC00, the GC/MS reanalysis results were comparable to the original GC/ECD reanalysis results (Table 3). The GC/MS reanalysis results for sample LWG0108R001TSSPWBC00, analyzed in duplicate, were consistent with the December 2003 GC/ECD reanalysis results. Therefore, the results from the original analysis by CAS using EPA Method 8081A were rejected due to the lack of reproducibility. The average of the reanalysis results generated by CAS using EPA Method 8081A and the GC/MS reanalysis results will be reported for sample LWG0108R001TSSPWBC00. The initial and reanalysis results will be addressed in the data quality report.

## References

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PSEP. 1997. Puget Sound Estuary Program: Recommended Quality Assurance and Quality Control Guidelines for the Collection of Environmental Data in Puget Sound. *In:* Recommended Protocols for Measuring Selected Environmental Variables in Puget Sound. Puget Sound Action Team, Olympia, WA.

U.S. EPA. 1999. USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review. U.S. Environmental Protection Agency, Office of Emergency and Remedial Response, Washington, DC.



**Figure 1. Comparison of total PCB Aroclor concentrations and the difference between results obtained by GC/ECD and by GC/MS-ion trap**

Values are included only when results obtained by GC/ECD and GC/MS-ion trap have an RPD greater than 50.

The difference between results was calculated as GC/ECD - GC/MS.

Table 1. Summary of Data Qualifiers for Analyses by GC/MS with Ion Trap

Sample	Analyte	Qualifier
<b>Qualified for continuing calibration result</b>		
LWG0108R010TSSBWBC30	Endrin	UJ <sup>a</sup>
LWG0109R006TSSBWBC00		
LWG01FZ0306TSCPFLC30		
LWG01FZ0609TSCPFLC20		
LWG01FZ0609TSCPFLC30		
LWG0103R014TSNPWBC20		
LWG0103R014TSNPWBC10		
LWG0107R009TSNPWBC00		
LWG0105R006TSNPWBC00		
<b>Qualifier for internal standard result</b>		
LWG0108R010TSPMWBC00	2,4'-DDD	UJ
	2,4'-DDE	UJ
	2,4'-DDT	UJ
	4,4'-DDD	J
	4,4'-DDE	J
	4,4'-DDT	UJ
	beta-Endosulfan	UJ
	cis-Nonachlor	UJ
	Dieldrin	UJ
	Endosulfan sulfate	UJ
	Endrin	UJ
	Endrin aldehyde	UJ
	Endrin ketone	UJ
	Methoxychlor	UJ
	Mirex	UJ
	trans-Chlordane	UJ
	trans-Nonachlor	UJ

Note: Results were additionally qualified by CAS when the pesticide was detected below the method reporting limit.

<sup>a</sup> Endrin was not detected in any sample by GC/MS with ion trap.

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Table 2. Pesticide Concentrations With and Without Acid Cleanup

Chemical Name	Sample ID	LWG0107R009TSSBWBC20		LWG0107R009TSSBWBC30		LWG0108R010TSSBWBC10		LWG0108R010TSSBWBC20		LWG0108R032TSSBWBC00	
	Cleanup method	No acid	Acid	No acid	Acid	No acid	Acid	No acid	Acid	No acid	Acid
		µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
2,4'-DDD		100 U	13 J	100 U	29	100 U	8.6 U	100 U	8.6 U	100 U	8.6 U
2,4'-DDE		100 U	7.5 U	100 U	7.5 U	100 U	7.5 U	100 U	7.5 U	100 U	7.5 U
2,4'-DDT		100 U	17 J	100 U	6.9 U	100 U	6.9 U	100 U	6.9 U	100 U	6.9 U
4,4'-DDD		100 U	54	100	100	100 U	11 J	100 U	12 J	100 U	24 J
4,4'-DDE		190	140	140	130	100 U	55	100 U	40	100 U	95
4,4'-DDT		150	98	100 U	35	100 U	7.3 J	100 U	6.3 U	100 U	26
Aldrin		100 U	13 U	100 U	13 U	100 U	13 U	100 U	13 U	100 U	13 U
alpha-Hexachlorocyclohexane		50 U	6.4 U	50 U	6.4 U	50 U	6.4 U	50 U	6.4 U	50 U	6.4 U
beta-Endosulfan		100 U		100 U		100 U		100 U		100 U	
beta-Hexachlorocyclohexane		100 U	8.5 U	100 U	8.5 U	100 U	8.5 U	100 U	8.5 U	100 U	8.5 U
cis-Nonachlor		100 U	7.1 U	100 U	7.1 U	100 U	7.1 U	100 U	7.1 U	100 U	7.1 U
delta-Hexachlorocyclohexane		100 U	7.3 U	100 U	7.3 U	100 U	7.3 U	100 U	7.3 U	100 U	7.3 U
Dieldrin		100 U		100 U		100 U		100 U		100 U	
Endosulfan sulfate		100 U		100 U		100 U		100 U		100 U	
Endrin		100 U		100 U		100 U		100 U		100 U	
Endrin aldehyde		100 U		100 U		100 U		100 U		100 U	
Endrin ketone		100 U		100 U		100 U		100 U		100 U	
gamma-Hexachlorocyclohexane		100 U	9.6 U	100 U	9.6 U	100 U	9.6 U	100 U	9.6 U	100 U	9.6 U
Heptachlor		100 U	13 U	100 U	13 U	100 U	13 U	100 U	13 U	100 U	13 U
Heptachlor epoxide		100 U	8 U	100 U	8 U	100 U	8 U	100 U	8 U	100 U	8 U
Hexachlorobenzene		50 U	6.4 U	50 U	6.4 U	50 U	6.4 U	50 U	6.4 U	50 U	6.4 U
Hexachlorobutadiene		50 U	4.6 U	50 U	4.6 U	50 U	4.6 U	50 U	4.6 U	50 U	4.6 U
Hexachloroethane		50 U	13 U	50 U	13 U	50 U	13 U	50 U	13 U	50 U	13 U
Methoxychlor		50 U		50 U		50 U		50 U		50 U	
Mirex		50 U	6.2 U	50 U	6.2 U	50 U	6.2 U	50 U	6.2 U	50 U	6.2 U
Oxychlorane		100 U	32 U	100 U	32 U	100 U	32 U	100 U	32 U	100 U	32 U
trans-Chlordane		100 U	8.4 U	100 U	8.4 U	100 U	8.4 U	100 U	8.4 U	100 U	8.4 U
trans-Nonachlor		100 U	11 U	100 U	11 U	100 U	11 U	100 U	11 U	100 U	11 U

No acid - acid cleanup was not completed

Acid - acid cleanup was completed

J - concentration of the associated result is estimated

U - result is undetected at the detection limit shown

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Table 3. Summary of Original, Confirmation, and Ion Trap Results for DDT and Metabolites in Two Samples

Sample	Analyte	CAS Concentration by EPA Method 8081A	ARI Concentration by EPA Method 8270C	CAS Concentration for Reanalysis by EPA Method 8081A	CAS Concentration by EPA Method 8270C SIM	CAS Concentration by EPA Method 8270C-Ion Trap
LWG0107R006TSSPWBC00	4,4'-DDD	350	1300 J	NA	NA	260
	4,4'-DDE	800	600 UJ	NA	NA	460
	4,4'-DDT	2000	2300	NA	NA	1400
	2,4'-DDD	96	NR	NA	NA	46
	2,4'-DDE	37 NJ	NR	NA	NA	27
	2,4'-DDT	400	NR	NA	NA	250
LWG0108R001TSSPWBC00	4,4'-DDD	140 R	580 UJ	19 U	NA	6.1 U
	4,4'-DDE	170 R	580 UJ	22 U	NA	29
	4,4'-DDT	14000 R	580 UJ	54	200 U	8.9 J
	2,4'-DDD	27 R	NR	19 U	NA	8.6 U
	2,4'-DDE	4 UR	NR	19 U	NA	7.5 U
	2,4'-DDT	2700 R	NR	63 NJ	200 U	6.9 U

## Notes:

Units are µg/kg as received

CAS - Analyzed by Columbia Analytical Services, Kelso, Washington.

ARI - Analyzed by Analytical Resources, Inc., Tukwila, Washington

NA - Not analyzed

NR - Not reported

J - concentration of the associated result is estimated

N - the analyte is tentatively identified

U - result is undetected at the detection limit shown

UJ - result is undetected at an estimated detection limit

R - result was rejected

Table A1. Pesticide Concentrations by GC/ECD and by GC/MS with Ion Trap

Sample Identifier	Chemical Name	Sum of Aroclors	Lipids			2,4'-DDD			2,4'-DDE			2,4'-DDT			4,4'-DDD		
	Analytical Method	Calculated	PSEP	PSEP	RPD	SW8081A	SW8270C	RPD	SW8081A	SW8270C	RPD	SW8081A	SW8270C	RPD	SW8081A	SW8270C	RPD
		µg/kg	percent	percent		µg/kg	µg/kg		µg/kg	µg/kg		µg/kg	µg/kg		µg/kg	µg/kg	
LWG0107R009TSSBWBC20		90	1.5	3.8	-86.8	6 U	13 J	-73.7	4 U	7.5 U		16 NJ	17 J	-6	56	54	4
LWG0107R009TSSBWBC30		780 J	5.3	3.6	38	28 NJ	29	-4	7.5 UJ	7.5 U		24 NJ	6.9 U	111	120	100	18
LWG0108R010TSSBWBC10		4500 J	5	4.4	13	52 N	8.6 U	143	25 U	7.5 U		69 U	6.9 U		20 U	11 J	
LWG0108R010TSSBWBC20		3300 J	6.6	5.7	15	48 U	8.6 U		20 U	7.5 U		47 U	6.9 U		20 U	12 J	
LWG0108R032TSSBWBC00		880 J	6.6	4.6	36	22 NJ	8.6 U	88	4 UJ	7.5 U		28 NJ	6.9 U	121	26	24 J	8
LWG0102R001TSSPWBC00		2330 J	3.5	2.3	41	4 U	8.6 U		19 UJ	7.5 U		100 NJ	6.9 U	174	8.1 NJ	14 J	-53
LWG0102R015TSSPWBC00		3360	4.1	2.6	45	8.1 U	8.6 U		29 UJ	7.5 U		150 NJ	6.9 U	182	8.5 NJ	9.2 J	-8
LWG0103R014TSLSWBC10		2020 J	8.7	8	8	15 U	8.6 U		4 U	7.5 U		79 N	6.9 U	168	37 N	41	-10
LWG0103R014TSNPWBC10		710	6.3	5	23.01	9.9 U	8.6 U		9.9 U	7.5 U		23 NJ	6.9 U	107.7	39 N	46	-16.5
LWG0103R014TSNPWBC20		370	8.1	6.6	20	4.5 U	8.6 U		4 U	7.5 U		20 NJ	6.9 U	97	34	47	-32
LWG0103R014TSPMWBC00		147	7.9	7	12	4 U	8.6 U		1 U	7.5 U		5.7 J	6.9 U		16	6.1 U	90
LWG0103R014TSSBWBC00		780	5.5	4.4	22	5.4 U	8.6 U		4 U	7.5 U		42 NJ	6.9 U	144	29 J	32	-10
LWG0103R034TSSPWBC00		500	5.2	4.4	17	4 U	8.6 U		4 UJ	7.5 U		18 NJ	6.9 U	89	6.9 N	6.1 U	12
LWG0104R023TSSBWBC10		1280	7.2	6.4	12	11 U	9.6 J		4 U	7.5 U		46 NJ	6.9 U	148	42 NJ	47	-11
LWG0104R023TSSBWBC20		470	6.1	5.6	9	4.9 U	8.6 U		4 U	7.5 U		22 NJ	6.9 U	104	25 J	42	-51
LWG0104R023TSSBWBC30		590	6.4	6.7	-5	4.9 U	8.6 U		1 U	7.5 U		21 NJ	6.9 U	101	23 J	39	-52
LWG0105R001TSSPWBC00		196 J	5.4	3.7	37	1 U	8.6 U		1 UJ	7.5 U		10	6.9 U	37	4.7 N	6.1 U	
LWG0105R006TSNPWBC00		440	4.6	3.9	16	6.1 U	8.6 U		4 U	7.5 U		29 NJ	6.9 U	123	47	49	-4
LWG0105R006TSPMWBC00		174	10.7	8.7	21	15 NJ	8.6 U	54	1.7 U	7.5 U		7 NJ	6.9 U	1	18	31	-53
LWG0105R006TSSBWBC00		390	7	6	15	6.5 U	8.6 U		1.5 U	7.5 U		20 NJ	6.9 U	97	30 J	40	-29
LWG0106R002TSSPWBC10		600 J	6	4.4	31	4 U	8.6 U		4 U	7.5 U		9 U	6.9 U		5.3 N	6.1 U	
LWG0106R002TSSPWBC20		2300	3.5	3.5	0	20 U	8.6 U		20 U	7.5 U		23 U	6.9 U		20 U	12 J	
LWG0106R004TSSPWBC00		400 J	5.2	3.8	31	40 J	26	42	10 NJ	14 J	-33	34 NJ	18 J	62	150 J	130	14
LWG0106R024TSSBWBC00		252	2.3	1.5	42	4.3 NJ	8.6 U		1 U	7.5 U		13 NJ	6.9 U	61	17 J	21 J	-21
LWG0107R003TSSPWBC00		226 J	3.9	2.2	56	25 U	18 J		7.1 NJ	7.9 J	-11	78	47	50	90	78	14
LWG0107R006TSCAWBC00		120	0.87	0.66	27	100	64	44	12 J	13 J	-8	70 N	39	57	210	110	63
LWG0107R006TSSPWBC00		430 J	2.2	1.2	59	96	46	70	37 NJ	27	31	400	250	46	350	260	30
LWG0107R009TSLSWBC00		1400	6.9	8.4	-20	37 N	8.6 U	125	20 U	7.5 U		27 U	6.9 U		37 N	57	-43
LWG0107R009TSNPWBC00		1800	2.3	2.3	0	19 U	29	-42	39 NJ	53	-30	110 NJ	91	19	45 N	43	5
LWG0107R009TSSBWBC10		430	6	5.5	9	27 NJ	8.6 U	103	6.5 U	7.5 U		42 NJ	30	33	53	63	-17
LWG0108R001TSSPWBC00		187	3	2.7	11	19 U	8.6 U		19 U	7.5 U		63 NJ	6.9 U	161	19 U	6.1 U	
LWG0108R001TSSPWBC00-DUP <sup>a</sup>				3			8.6 U			7.5 U			6.9 U			6.1 U	
LWG0108R003TSSPWBC00		480 J	3.5	2.5	33	4 U	8.6 U		4 U	7.5 U		14 U	6.9 U		4.3 N	6.1 U	



Table A1. Pesticide Concentrations by GC/ECD and by GC/MS with Ion Trap

Sample Identifier	Chemical Name	Sum of Aroclors	Lipids			2,4'-DDD			2,4'-DDE			2,4'-DDT			4,4'-DDD		
	Analytical Method	Calculated	PSEP	PSEP	RPD	SW8081A	SW8270C	RPD	SW8081A	SW8270C	RPD	SW8081A	SW8270C	RPD	SW8081A	SW8270C	RPD
		µg/kg	percent	percent		µg/kg	µg/kg		µg/kg	µg/kg		µg/kg	µg/kg		µg/kg	µg/kg	
LWG0108R010TSLSWBC00		320	7.5	7.2	4	62 NJ	40	43	6.7 U	7.5 U		87 N	50	54	150	150	0
LWG0108R010TSPMWBC00		138	10.2	9.4	8	4.2 U	8.6 UJ		1 U	7.5 UJ		5.3 N	6.9 UJ		15	35 J	-80
LWG0108R010TSSBWBC30		1000	5.5	4.4	22	23 NJ	8.6 U	91	10 U	7.5 U		26 U	6.9 U		18	33	-59
LWG0109R001TSSPWBC00		510 J	3.5	2.9	19	4 UJ	8.6 U		4 U	7.5 U		12 U	6.9 U		4 U	6.1 U	
LWG0109R006TSLSWBC00		730	5.4	5	8	9.9 U	8.6 U		4 U	7.5 U		23 NJ	6.9 U	108	28 J	27	4
LWG0109R006TSNPWBC00		1010	4.4	3	38	10 U	8.6 U		10 U	7.5 U		29 NJ	6.9 U	123	18 N	6.1 U	99
LWG0109R006TSPMWBC00		290	7.9	7.2	9	5.8 U	8.6 U		2.1 U	7.5 U		12 NJ	6.9 U	54	18	41	-78
LWG0109R006TSSBWBC00		840 J	5.1	3.8	29	8.6 U	8.6 U		11 UJ	7.5 U		40 NJ	6.9 U	141	32	43	-29
LWG01FZ0306TSCPFLC10		670	4.3	4	7	11 NJ	8.6 U	24	4 UJ	7.5 U		21 NJ	6.9 U	101	33 J	34	-3
LWG01FZ0306TSCPFLC30		1060	8	7	13	15 U	8.6 U		4 U	7.5 U		32 NJ	6.9 U	129	42 J	34	21
LWG01FZ0306TSCPWBC20		6500 J	8	8	0	130 J	33	119	20 U	7.5 U		120 U	6.9 U		87 J	92	-6
LWG01FZ0306TSCPWBC30		230	6.9	6.5	6	16 NJ	8.6 U	60	1 U	7.5 U		9.3 NJ	6.9 U	30	33 J	43	-26
LWG01FZ0609TSBBFLC20		1300 J	1.2	1.2	0	20 U	8.6 U		20 U	7.5 U		21 U	6.9 U		20 U	6.1 U	
LWG01FZ0609TSBBFLC30		560	0.97	0.94	3	4.3 N	8.6 U		4 U	7.5 U		4.8 U	6.9 U		5 N	6.1 U	
LWG01FZ0609TSBBWBC10		1700	1.3	1.6	-21	20 U	8.6 U		20 U	7.5 U		26 U	6.9 U		20 U	8 J	
LWG01FZ0609TSBCWBC20		250	7.5	6.3	17	3 U	8.6 U		1 U	7.5 U		10 NJ	6.9 U	37	16 J	21 J	-27
LWG01FZ0609TSCPFLC10		1200 J	4.4	4.1	7	20 U	8.6 U		20 U	7.5 U		23 U	6.9 U		26 J	27	-4
LWG01FZ0609TSCPFLC20		390	4.4	3	38	20 J	12 J	50	4 U	7.5 U		11 NJ	6.9 U	46	70	57	20
LWG01FZ0609TSCPFLC30		1200 J	4.5	4	12	28 NJ	11 J	87	9.8 UJ	7.5 U		24 U	6.9 U		42 J	45	-7
LWG01FZ0609TSCPWBC10		690	6.7	5.1	27	12 NJ	8.6 U	33	4 UJ	7.5 U		16 U	6.9 U		39 J	6.1 U	146
LWG01FZ0609TSCPWBC20		1010	13	13	0	43 NJ	8.6 U	133	5 UJ	7.5 U		21 NJ	6.9 U	101	55 J	60	-9
LWG01FZ0609TSCPWBC30		1100	5.6	6.3	-12	33 J	8.6 U	117	9.9 U	7.5 U		24 U	6.9 U		38 J	50	-27



Table A1. Pesticide Concentrations by GC/ECD and by GC/MS with Ion Trap

Sample Identifier	Chemical Name		4,4'-DDE			4,4'-DDT			Aldrin			alpha-Hexachlorocyclohexane			beta-Endosulfan			beta-Hexachlorocyclohexane		
	Analytical Method		SW8081A	SW8270C	RPD	SW8081A	SW8270C	RPD	SW8081A	SW8270C	RPD	SW8081A	SW8270C	RPD	SW8081A	SW8270C	RPD	SW8081A	SW8270C	RPD
			µg/kg	µg/kg		µg/kg	µg/kg		µg/kg	µg/kg		µg/kg	µg/kg		µg/kg	µg/kg		µg/kg	µg/kg	
LWG0107R009TSSBWBC20			220	140	44	210 N	98	73	4 U	13 U		4 U	6.4 U		4 U	100 U		4 U	8.5 U	
LWG0107R009TSSBWBC30			190	130	38	79 N	35	77	4 U	13 U		4 U	6.4 U		4 U	100 U		6.3 N	8.5 U	
LWG0108R010TSSBWBC10			130 J	55	81	430 N	7.3 J	193	20 U	13 U		20 U	6.4 U		20 U	100 U		6.1 NJ	8.5 U	
LWG0108R010TSSBWBC20			66 J	40	49	330 N	6.3 U	193	20 U	13 U		20 U	6.4 U		20 U	100 U		20 U	8.5 U	
LWG0108R032TSSBWBC00			160 J	95	51	97 N	26	115	4 U	13 U		4 U	6.4 U		4 U	100 U		4.7 N	8.5 U	
LWG0102R001TSSPWBC00			95 NJ	30	104	72 NJ	6.3 U	168	4 U	13 U		4 U	6.4 U		4 U	15 U		4 U	8.5 U	
LWG0102R015TSSPWBC00			30 U	28		120 N	6.3 U	180	4 U	13 U		4 U	6.4 U		4 U	15 U		5.3 NJ	8.5 U	
LWG0103R014TSLSWBC10			200	120	50	79 N	17 J	129	4 U	13 U		4 U	6.4 U		4.1 U	15 U		4 U	8.5 U	
LWG0103R014TSNPWBC10			240	210	13	46 N	6.3 U	152	9.9 U	13 U		9.9 U	6.4 U		9.9 U	15 U		9.9 U	8.5 U	
LWG0103R014TSNPWBC20			240	180	29	25 N	6.3 U	119	4 U	13 U		4 U	6.4 U		4 U	15 U		4 U	8.5 U	
LWG0103R014TSPMWBC00			120	98	20	6.5 J	6.3 U	3	1 U	13 U		1 U	6.4 U		1 U	15 U		4.1 U	8.5 U	
LWG0103R014TSSBWBC00			180	110	48	62 NJ	15 J	122	4 U	13 U		4 U	6.4 U		4 U	15 U		4 U	8.5 U	
LWG0103R034TSSPWBC00			19 U	24 J	-23	43 NJ	12 J	113	4.5 NJ	13 U		4 U	6.4 U		4 U	15 U		4.8 U	8.5 U	
LWG0104R023TSSBWBC10			270	170	45	100 NJ	27	115	4 U	13 U		4 U	6.4 U		4 U	15 U		4 UJ	8.5 U	
LWG0104R023TSSBWBC20			160	120	29	45 N	6.3 U	151	4 U	13 U		4 U	6.4 U		4 U	15 U		4 U	8.5 U	
LWG0104R023TSSBWBC30			110 J	89	21	50 NJ	6.3 U	155	1 U	13 U		1 U	6.4 U		1.3 UJ	15 U		1.2 UJ	8.5 U	
LWG0105R001TSSPWBC00			15 U	16 J	-6	19 N	6.3 U	100	1 U	13 U		1 U	6.4 U		1.3 U	15 U		3.7 NJ	8.5 U	
LWG0105R006TSNPWBC00			360	250	36	36 NJ	6.3 U	140	4 U	13 U		4 U	6.4 U		4 U	15 U		4 U	8.5 U	
LWG0105R006TSPMWBC00			110	110	0	7.7	6.3 U	20	1.2 U	13 U		1 U	6.4 U		1 U	15 U		2.4 U	8.5 U	
LWG0105R006TSSBWBC00			120 J	96	22	68 NJ	35	64	1 U	13 U		1 U	6.4 U		1.2 UJ	15 U		1.4 UJ	8.5 U	
LWG0106R002TSSPWBC10			19 U	19 J		61 NJ	6.3 U	163	4 U	13 U		4 U	6.4 U		4 U	15 U		9.6 N	8.5 U	12
LWG0106R002TSSPWBC20			22 U	26	-16.7	240 NJ	11 J	182.5	20 U	13 U		20 U	6.4 U		20 U	15 U		20 U	8.5 U	
LWG0106R004TSSPWBC00			330 J	130	87	150 J	120	22	4 UJ	13 U		4 U	6.4 U		4 U	15 U		8.8 NJ	8.5 U	3
LWG0106R024TSSBWBC00			110 J	100	10	49 NJ	17 J	97	1 U	13 U		1 U	6.4 U		1 UJ	15 U		1.1 NJ	8.5 U	
LWG0107R003TSSPWBC00			180	140	25	280	220	24	1 U	13 U		1 U	6.4 U		1.7 U	15 U		2.4 NJ	8.5 U	
LWG0107R006TSCAWBC00			120	69	54	130 N	75	54	1 U	13 U		1 U	6.4 U		2.1 U	15 U		2.5 NJ	8.5 U	
LWG0107R006TSSPWBC00			800	460	54	2000	1400	35	1 U	13 U		1.8 U	6.4 U		1 U	15 U		1 U	8.5 U	
LWG0107R009TSLSWBC00			92 J	100	-8	140 NJ	31	127	20 U	13 U		20 U	6.4 U		20 U	15 U		20 U	8.5 U	
LWG0107R009TSNPWBC00			560	530	6	120 NJ	6.3 U	180	19 U	13 U		19 U	6.4 U		19 U	15 U		19 U	8.5 U	
LWG0107R009TSSBWBC10			220	160	32	150	110	31	4 U	13 U		4 U	6.4 U		4 U	15 U		4 U	8.5 U	
LWG0108R001TSSPWBC00			22 U	29	-27	54 N	8.9 J	143	4 U	13 U		4 U	6.4 U		4 U	15 U		4.9 NJ	8.5 U	
LWG0108R001TSSPWBC00-DUP <sup>a</sup>				37			15 J			13 U			6.4 U			15 U			8.5 U	
LWG0108R003TSSPWBC00			17 U	18 J	-6	47 N	6.3 U	153	4 U	13 U		4 U	6.4 U		4 U	15 U		4 U	8.5 U	

Table A1. Pesticide Concentrations by GC/ECD and by GC/MS with Ion Trap

Sample Identifier	Chemical Name		4,4'-DDE			4,4'-DDT			Aldrin			alpha-Hexachlorocyclohexane			beta-Endosulfan			beta-Hexachlorocyclohexane		
	Analytical Method		SW8081A		RPD	SW8081A		RPD	SW8081A		RPD	SW8081A		RPD	SW8081A		RPD	SW8081A		RPD
			µg/kg	µg/kg		µg/kg	µg/kg		µg/kg	µg/kg		µg/kg	µg/kg		µg/kg	µg/kg		µg/kg	µg/kg	
LWG0108R010TSLSWBC00			210	160	27	290	200	37	4 U	13 U		4 U	6.4 U		4 U	15 U		4 U	8.5 U	
LWG0108R010TSPMWBC00			110	140 J	-24	5.2 NJ	6.3 UJ		1.7 U	13 U		1 U	6.4 U		1 U	15 UJ		2.7 U	8.5 U	
LWG0108R010TSSBWBC30			96 J	67	36	120 N	6.3 U	180	10 U	13 U		10 U	6.4 U		10 U	15 U		10 U	8.5 U	
LWG0109R001TSSPWBC00			21 U	24 J	-13	51 N	19 J	91	4 U	13 U		4 U	6.4 U		4 U	15 U		6.7 NJ	8.5 U	
LWG0109R006TSLSWBC00			130	100	26	48 N	6.3 U	154	4 U	13 U		4 U	6.4 U		4 U	15 U		4 U	8.5 U	
LWG0109R006TSPNPWBC00			140	150	-7	41 NJ	6.3 U	147	10 U	13 U		10 U	6.4 U		10 U	15 U		10 U	8.5 U	
LWG0109R006TSPMWBC00			210	160	27	16 N	6.3 U	87	1 U	13 U		1 U	6.4 U		1.2 U	15 U		3.6 U	8.5 U	
LWG0109R006TSSBWBC00			180	100	57	79 N	6.3 U	170	4 U	13 U		4 U	6.4 U		4 U	15 U		4.4 NJ	8.5 U	
LWG01FZ0306TSCPFLC10			110 J	87	23	31 NJ	6.3 U	132	4 U	13 U		4 U	6.4 U		4 UJ	15 U		4 UJ	8.5 U	
LWG01FZ0306TSCPFLC30			160 J	110	37	43 NJ	6.3 U	149	4 U	13 U		4 U	6.4 U		4 U	15 U		5.9 U	8.5 U	
LWG01FZ0306TSCPWBC20			300 J	220	31	530 NJ	6.3 U	195	20 U	13 U		20 U	6.4 U		20 U	15 U		20 U	8.5 U	
LWG01FZ0306TSCPWBC30			130 J	79	49	21 NJ	6.3 U	108	1 U	13 U		1 U	6.4 U		9.7 UJ	15 U		3 UJ	8.5 U	
LWG01FZ0609TSBBFLC20			20 N	12 J	50	91 NJ	6.3 U	174	20 U	13 U		20 U	6.4 U		20 U	15 U		20 U	8.5 U	
LWG01FZ0609TSBBFLC30			30	23 J	26	27 NJ	6.3 U	124	4 U	13 U		4 U	6.4 U		4 U	15 U		4 U	8.5 U	
LWG01FZ0609TSBBWBC10			26 J	33	-24	130 NJ	6.3 U	182	20 U	13 U		20 U	6.4 U		20 U	15 U		20 U	8.5 U	
LWG01FZ0609TSBCWBC20			95	66	36	19 NJ	6.3 U	100	1 U	13 U		1 U	6.4 U		1.1 U	15 U		1.5 U	8.5 U	
LWG01FZ0609TSCPFLC10			79 J	67	16	96 NJ	6.3 U	175	20 U	13 U		20 U	6.4 U		20 UJ	15 U		20 UJ	8.5 U	
LWG01FZ0609TSCPFLC20			110	73	40	20 NJ	6.3 U	104	4 U	13 U		4 U	6.4 U		4 U	15 U		4 U	8.5 U	
LWG01FZ0609TSCPFLC30			94	73	25	110 NJ	6.3 U	178	9.8 U	13 U		9.8 U	6.4 U		9.8 U	15 U		9.8 U	8.5 U	
LWG01FZ0609TSCPWBC10			150	140	7	34 NJ	6.3 U	137	4 U	13 U		4 U	6.4 U		11 U	15 U		6.1 U	8.5 U	
LWG01FZ0609TSCPWBC20			150	110	31	62 NJ	6.3 U	163	4 U	13 U		4 U	6.4 U		21 N	15 U	33	4 U	8.5 U	
LWG01FZ0609TSCPWBC30			87 J	96	-10	110 NJ	6.3 U	178	9.9 U	13 U		9.9 U	6.4 U		9.9 U	15 U		9.9 U	8.5 U	

Table A1. Pesticide Concentrations by GC/ECD and by GC/MS with Ion Trap

Sample Identifier	Chemical Name		cis-Nonachlor			delta-Hexachlorocyclohexane			Dieldrin			Endosulfan sulfate			Endrin			Endrin aldehyde		
	Analytical Method		SW8081A		RPD	SW8081A		RPD	SW8081A		RPD	SW8081A		RPD	SW8081A		RPD	SW8081A		RPD
			µg/kg	µg/kg		µg/kg	µg/kg		µg/kg	µg/kg		µg/kg	µg/kg		µg/kg	µg/kg		µg/kg	µg/kg	
LWG0107R009TSSBWBC20			32 U	7.1 U		4 U	7.3 U		4 U	100 U		4 U	100 U		4 U	100 U		4 U	100 U	
LWG0107R009TSSBWBC30			31 U	7.1 U		4 U	7.3 U		5.5 U	100 U		4 U	100 U		4 U	100 U		4 U	100 U	
LWG0108R010TSSBWBC10			20 U	7.1 U		20 U	7.3 U		20 U	100 U		20 U	100 U		20 U	100 U		20 U	100 U	
LWG0108R010TSSBWBC20			20 U	7.1 U		20 U	7.3 U		20 U	100 U		20 U	100 U		20 U	100 U		20 U	100 U	
LWG0108R032TSSBWBC00			18 U	7.1 U		4 U	7.3 U		7.3 J	100 U		4 U	100 U		4 U	100 U		4 U	100 U	
LWG0102R001TSSPWBC00			8.6 U	7.1 U		4 U	7.3 U		34 J	14 U	83	4 U	12 U		8.3 N	31 U		8.8 N	8.5 U	3
LWG0102R015TSSPWBC00			9.5 U	7.1 U		4 U	7.3 U		48 NJ	14 U	110	4 U	12 U		15 N	31 U		8.6 U	8.5 U	
LWG0103R014TSLSWBC10			24 U	7.1 U		4 U	7.3 U		23 U	14 U		4 U	12 U		8.7 N	31 U		4 U	8.5 U	
LWG0103R014TSNPWBC10			28 U	7.1 U		9.9 U	7.3 U		9.9 U	14 U		9.9 U	12 U		9.9 U	31 UJ		9.9 U	8.5 U	
LWG0103R014TSNPWBC20			24 U	7.1 U		4 U	7.3 U		5.9 NJ	14 U		4 U	12 U		4 U	31 UJ		4 U	8.5 U	
LWG0103R014TSPMWBC00			5.7 U	7.1 U		1.3 U	7.3 U		1.9 U	14 U		1 U	12 U		1 U	31 U		1.6 U	8.5 U	
LWG0103R014TSSBWBC00			20 U	7.1 U		4 U	7.3 U		14 NJ	14 U		4 U	12 U		7.4 NJ	31 U		4 U	8.5 U	
LWG0103R034TSSPWBC00			4.4 U	7.1 U		4 U	7.3 U		4 U	14 U		4 U	12 U		4.8 NJ	31 U		4 U	8.5 U	
LWG0104R023TSSBWBC10			31 U	7.1 U		4 U	7.3 U		12 NJ	14 U		4 U	12 U		11 NJ	31 U		4.3 U	8.5 U	
LWG0104R023TSSBWBC20			18 U	7.1 U		4 U	7.3 U		6.7 NJ	14 U		4 U	12 U		4 U	31 U		4 U	8.5 U	
LWG0104R023TSSBWBC30			17 U	7.1 U		1 U	7.3 U		6.4 NJ	14 U		1 UJ	12 U		1.8 UJ	31 U		1.5 UJ	8.5 U	
LWG0105R001TSSPWBC00			3.6 UJ	7.1 U		1 U	7.3 U		4.4 NJ	14 U		1.1 NJ	12 U		1 U	31 U		1.5 UJ	8.5 U	
LWG0105R006TSNPWBC00			30 U	7.1 U		4 U	7.3 U		4.9 U	14 U		4 U	12 U		4 U	31 UJ		4 U	8.5 U	
LWG0105R006TSPMWBC00			7.3 U	7.1 U		1.6 U	7.3 U		2.2 U	14 U		1 U	12 U		1 U	31 U		1.1 U	8.5 U	
LWG0105R006TSSBWBC00			22 U	7.1 U		1 U	7.3 U		5.8 UJ	14 U		1 UJ	12 U		1.4 UJ	31 U		2.2 UJ	8.5 U	
LWG0106R002TSSPWBC10			4 UJ	7.1 U		4 U	7.3 U		4 U	14 U		4 U	12 U		4 U	31 U		4 U	8.5 U	
LWG0106R002TSSPWBC20			20 U	7.1 U		20 U	7.3 U		20 U	14 U		20 U	12 U		20 U	31 U		20 U	8.5 U	
LWG0106R004TSSPWBC00			32 UJ	7.1 U		4 U	7.3 U		5 NJ	14 U		4 UJ	12 U		4 U	31 U		4 U	8.5 U	
LWG0106R024TSSBWBC00			12 U	7.1 U		1 U	7.3 U		2.5 NJ	14 U		1 UJ	12 U		1 UJ	31 U		1 UJ	8.5 U	
LWG0107R003TSSPWBC00			51 UJ	7.1 U		1 U	7.3 U		3.5 U	14 U		1 U	12 U		1 U	31 U		1.7 UJ	8.5 U	
LWG0107R006TSCAWBC00			35 U	7.1 U		1 U	7.3 U		1 U	14 U		1 UJ	12 U		2.4 U	31 U		1 UJ	8.5 U	
LWG0107R006TSSPWBC00			240 UJ	7.1 U		1 U	7.3 U		10 U	14 U		1.7 U	12 U		2.5 U	31 U		2.9 UJ	8.5 U	
LWG0107R009TSLSWBC00			22 U	7.1 U		20 U	7.3 U		20 U	14 U		20 U	12 U		20 U	31 U		20 U	8.5 U	
LWG0107R009TSNPWBC00			22 U	7.1 U		19 U	7.3 U		19 U	14 U		19 U	12 U		19 U	31 UJ		19 U	8.5 U	
LWG0107R009TSSBWBC10			36 U	7.1 U		4 U	7.3 U		5.7 N	14 U		4 U	12 U		4 U	31 U		4 U	8.5 U	
LWG0108R001TSSPWBC00			67 UJ	7.1 U		4 UJ	7.3 U		5.5 NJ	14 U		9.9 NJ	12 U		4 U	31 U		5.3 U	8.5 U	
LWG0108R001TSSPWBC00-DUP <sup>a</sup>				7.1 U			7.3 U			14 U			12 U			31 U			8.5 U	
LWG0108R003TSSPWBC00			4 U	7.1 U		4 U	7.3 U		4 U	14 U		4 U	12 U		4 U	31 U		4 U	8.5 U	

Table A1. Pesticide Concentrations by GC/ECD and by GC/MS with Ion Trap

Sample Identifier	Chemical Name		cis-Nonachlor			delta-Hexachlorocyclohexane			Dieldrin			Endosulfan sulfate			Endrin			Endrin aldehyde		
	Analytical Method		SW8081A		RPD	SW8081A		RPD	SW8081A		RPD	SW8081A		RPD	SW8081A		RPD	SW8081A		RPD
			µg/kg	µg/kg		µg/kg	µg/kg		µg/kg	µg/kg		µg/kg	µg/kg		µg/kg	µg/kg		µg/kg	µg/kg	
LWG0108R010TSLSWBC00			56 U	7.1 U		4 U	7.3 U		4.8 U	14 U		4 U	12 U		4 U	31 U		4 U	8.5 U	
LWG0108R010TSPMWBC00			5.2 U	7.1 UJ		2.1 U	7.3 U		1.4 U	14 UJ		1 U	12 UJ		1 U	31 UJ		1 U	8.5 UJ	
LWG0108R010TSSBWBC30			12 U	7.1 U		10 U	7.3 U		10 U	14 U		10 U	12 U		10 U	31 UJ		10 U	8.5 U	
LWG0109R001TSSPWBC00			4 UJ	7.1 U		4 U	7.3 U		4 U	14 U		4 U	12 U		4 U	31 U		4 U	8.5 U	
LWG0109R006TSLSWBC00			16 U	7.1 U		4 U	7.3 U		7.1 U	14 U		4 U	12 U		4 U	31 U		4 U	8.5 U	
LWG0109R006TSNPWBC00			12 U	7.1 U		10 U	7.3 U		10 U	14 U		10 U	12 U		10 U	31 U		10 U	8.5 U	
LWG0109R006TSPMWBC00			9.7 U	7.1 U		2.2 U	7.3 U		3.3 U	14 U		1 U	12 U		1 U	31 U		1 U	8.5 U	
LWG0109R006TSSBWBC00			24 U	7.1 U		4 U	7.3 U		13 NJ	14 U		4 U	12 U		4 U	31 UJ		6 U	8.5 U	
LWG01FZ0306TSCPFLC10			21 U	7.1 U		4 U	7.3 U		5.3 UJ	14 U		4 UJ	12 U		4 UJ	31 U		4 UJ	8.5 U	
LWG01FZ0306TSCPFLC30			27 U	7.1 U		4 UJ	7.3 U		7.2 U	14 U		4 U	12 U		8.5 NJ	31 UJ		4 U	8.5 U	
LWG01FZ0306TSCPWBC20			55 U	7.1 U		20 U	7.3 U		20 U	14 U		20 U	12 U		20 U	31 U		20 U	8.5 U	
LWG01FZ0306TSCPWBC30			16 U	7.1 U		1 U	7.3 U		6.2 UJ	14 U		1 UJ	12 U		1 UJ	31 U		1.8 UJ	8.5 U	
LWG01FZ0609TSBBFLC20			20 U	7.1 U		20 U	7.3 U		20 U	14 U		20 U	12 U		20 U	31 U		20 U	8.5 U	
LWG01FZ0609TSBBFLC30			4 U	7.1 U		4 U	7.3 U		4 U	14 U		4 U	12 U		4 U	31 U		4 U	8.5 U	
LWG01FZ0609TSBBWBC10			20 U	7.1 U		20 U	7.3 U		20 U	14 U		20 U	12 U		20 U	31 U		20 U	8.5 U	
LWG01FZ0609TSBCWBC20			9.8 U	7.1 U		1.7 NJ	7.3 U		9.5 NJ	14 U		1.2 N	12 U		1.2 U	31 U		1 UJ	8.5 U	
LWG01FZ0609TSCPFLC10			20 U	7.1 U		20 U	7.3 U		20 UJ	14 U		20 UJ	12 U		20 UJ	31 U		20 UJ	8.5 U	
LWG01FZ0609TSCPFLC20			17 U	7.1 U		4 U	7.3 U		4 U	14 U		4 U	12 U		4 U	31 UJ		4 U	8.5 U	
LWG01FZ0609TSCPFLC30			27 U	7.1 U		9.8 U	7.3 U		9.8 U	14 U		9.8 U	12 U		9.8 U	31 UJ		9.8 U	8.5 U	
LWG01FZ0609TSCPWBC10			24 U	7.1 U		4 U	7.3 U		5.2 U	14 U		4 U	12 U		4 U	31 U		4 U	8.5 U	
LWG01FZ0609TSCPWBC20			33 U	7.1 U		4 U	7.3 U		4 U	14 U		4 U	12 U		4 U	31 U		4 U	8.5 U	
LWG01FZ0609TSCPWBC30			21 U	7.1 U		9.9 U	7.3 U		9.9 U	14 U		9.9 U	12 U		9.9 U	31 U		9.9 U	8.5 U	

Table A1. Pesticide Concentrations by GC/ECD and by GC/MS with Ion Trap

Sample Identifier	Chemical Name		Endrin ketone			gamma-Hexachlorocyclohexane			Heptachlor			Heptachlor epoxide			Hexachlorobenzene			Hexachlorobutadiene		
	Analytical Method		SW8081A	SW8270C	RPD	SW8081A	SW8270C	RPD	SW8081A	SW8270C	RPD	SW8081A	SW8270C	RPD	SW8081A	SW8270C	RPD	SW8081A	SW8270C	RPD
			µg/kg	µg/kg		µg/kg	µg/kg		µg/kg	µg/kg		µg/kg	µg/kg		µg/kg	µg/kg		µg/kg	µg/kg	
LWG0107R009TSSBWBC20			4 U	100 U		4 U	9.6 U		4 U	13 U		4 U	8 U		4 U	6.4 U		4 UJ	4.6 U	
LWG0107R009TSSBWBC30			4 U	100 U		4 U	9.6 U		4 U	13 U		4 U	8 U		10 NJ	6.4 U	44	4 UJ	4.6 U	
LWG0108R010TSSBWBC10			20 U	100 U		20 U	9.6 U		20 U	13 U		20 U	8 U		20 U	6.4 U		20 U	4.6 U	
LWG0108R010TSSBWBC20			20 U	100 U		20 U	9.6 U		20 U	13 U		20 U	8 U		20 U	6.4 U		20 U	4.6 U	
LWG0108R032TSSBWBC00			4 U	100 U		4 UJ	9.6 U		4 U	13 U		7 U	8 U		12 NJ	6.4 U	61	4 UJ	4.6 U	
LWG0102R001TSSPWBC00			4 U	7.5 U		4 U	9.6 U		4 U	13 U		4.1 N	8 U		4 U	6.4 U		4 UJ	4.6 U	
LWG0102R015TSSPWBC00			4 U	7.5 U		4 U	9.6 U		4 U	13 U		4 U	8 U		4 U	6.4 U		4 UJ	4.6 U	
LWG0103R014TSLSWBC10			4 U	7.5 U		4 U	9.6 U		4 U	13 U		4 U	8 U		4 U	6.4 U		4 U	4.6 U	
LWG0103R014TSNPWBC10			9.9 U	7.5 U		9.9 U	9.6 U		9.9 U	13 U		9.9 U	8 U		9.9 U	6.4 U		9.9 UJ	4.6 U	
LWG0103R014TSNPWBC20			4 U	7.5 U		4 U	9.6 U		4 U	13 U		4 U	8 U		4 U	6.4 U		4 UJ	4.6 U	
LWG0103R014TSPMWBC00			1 U	7.5 U		3.3 U	9.6 U		2.3 U	13 U		1 U	8 U		7.3 N	6.4 U	13	1 UJ	4.6 U	
LWG0103R014TSSBWBC00			4 U	7.5 U		4 U	9.6 U		4 U	13 U		4 U	8 U		9.3 NJ	6.4 U	37	4 U	4.6 U	
LWG0103R034TSSPWBC00			4 U	7.5 U		4 U	9.6 U		4 U	13 U		4 U	8 U		4 U	6.4 U		4 U	4.6 U	
LWG0104R023TSSBWBC10			4 U	7.5 U		4.7 NJ	9.6 U		4 U	13 U		4 U	8 U		9.1 NJ	6.4 U	35	4 UJ	4.6 U	
LWG0104R023TSSBWBC20			4 U	7.5 U		4 U	9.6 U		4 U	13 U		4 U	8 U		9.3 NJ	6.4 U	37	4 U	4.6 U	
LWG0104R023TSSBWBC30			1 UJ	7.5 U		1 U	9.6 U		1.1 U	13 U		1 U	8 U		5.6 N	6.4 U		2.8 NJ	4.6 U	
LWG0105R001TSSPWBC00			1 UJ	7.5 U		1.4 N	9.6 U		1 U	13 U		1 U	8 U		3.6 NJ	6.4 U		1 UJ	4.6 U	
LWG0105R006TSNPWBC00			4 U	7.5 U		4 U	9.6 U		4 U	13 U		4 U	8 U		4 U	6.4 U		4 UJ	4.6 U	
LWG0105R006TSPMWBC00			1 UJ	7.5 U		1.9 U	9.6 U		2 U	13 U		1 U	8 U		3.8 U	6.4 U		1 UJ	4.6 U	
LWG0105R006TSSBWBC00			1 UJ	7.5 U		1 U	9.6 U		1.1 U	13 U		1 U	8 U		3.2 NJ	6.4 U		2.1 NJ	4.6 U	
LWG0106R002TSSPWBC10			4 U	7.5 U		4.4 NJ	9.6 U		4 U	13 U		4 U	8 U		4 U	6.4 U		4 U	4.6 U	
LWG0106R002TSSPWBC20			20 U	7.5 U		20 U	9.6 U		20 U	13 U		20 U	8 U		20 U	6.4 U		20 UJ	4.6 U	
LWG0106R004TSSPWBC00			4 U	7.5 U		4 UJ	9.6 U		4 U	13 U		4 U	8 U		11 NJ	6.4 U	53	4 UJ	4.6 U	
LWG0106R024TSSBWBC00			1 UJ	7.5 U		1 U	9.6 U		1 U	13 U		1 U	8 U		1 U	6.4 U		1 UJ	4.6 U	
LWG0107R003TSSPWBC00			1 UJ	7.5 U		1.1 U	9.6 U		1 U	13 U		1 U	8 U		4.2 N	6.4 U		1 UJ	4.6 U	
LWG0107R006TSCAWBC00			1 U	7.5 U		1 U	9.6 U		1 U	13 U		1.5 NJ	8 U		1.9 N	6.4 U		1 UJ	4.6 U	
LWG0107R006TSSPWBC00			1.1 UJ	7.5 U		1 U	9.6 U		1 U	13 U		1.8 NJ	8 U		7.8 NJ	6.4 U	20	2.5 NJ	4.6 U	
LWG0107R009TSLSWBC00			20 U	7.5 U		20 U	9.6 U		20 U	13 U		20 U	8 U		20 U	6.4 U		20 U	4.6 U	
LWG0107R009TSNPWBC00			19 U	7.5 U		19 U	9.6 U		19 U	13 U		19 U	8 U		19 U	6.4 U		19 UJ	4.6 U	
LWG0107R009TSSBWBC10			4 U	7.5 U		4 U	9.6 U		4.9 U	13 U		4.1 U	8 U		11 NJ	6.4 U	53	4 U	4.6 U	
LWG0108R001TSSPWBC00			4 U	7.5 U		4 U	9.6 U		4 U	13 U		4 U	8 U		4 U	6.4 U		4 U	4.6 U	
LWG0108R001TSSPWBC00-DUP <sup>a</sup>				7.5 U			9.6 U			13 U			8 U			6.4 U			4.6 U	
LWG0108R003TSSPWBC00			4 U	7.5 U		4 U	9.6 U		4 U	13 U		4 U	8 U		4 U	6.4 U		4 U	4.6 U	

Table A1. Pesticide Concentrations by GC/ECD and by GC/MS with Ion Trap

Sample Identifier	Chemical Name		Endrin ketone			gamma-Hexachlorocyclohexane			Heptachlor			Heptachlor epoxide			Hexachlorobenzene			Hexachlorobutadiene		
	Analytical Method		SW8081A	SW8270C	RPD	SW8081A	SW8270C	RPD	SW8081A	SW8270C	RPD	SW8081A	SW8270C	RPD	SW8081A	SW8270C	RPD	SW8081A	SW8270C	RPD
			µg/kg	µg/kg		µg/kg	µg/kg		µg/kg	µg/kg		µg/kg	µg/kg		µg/kg	µg/kg		µg/kg	µg/kg	
LWG0108R010TSLSWBC00			4 U	7.5 U		4 U	9.6 U		4 U	13 U		4 U	8 U		4 U	6.4 U		4 U	4.6 U	
LWG0108R010TSPMWBC00			1 U	7.5 UJ		1 U	9.6 U		1 U	13 U		1 U	8 U		5.7 N	6.4 U		1 UJ	4.6 U	
LWG0108R010TSSBWBC30			10 U	7.5 U		10 U	9.6 U		10 U	13 U		10 U	8 U		10 U	6.4 U		10 U	4.6 U	
LWG0109R001TSSPWBC00			4 U	7.5 U		4 U	9.6 U		4 U	13 U		4 U	8 U		4 U	6.4 U		4 U	4.6 U	
LWG0109R006TSLSWBC00			4 U	7.5 U		4 U	9.6 U		4 U	13 U		4 U	8 U		4 U	6.4 U		4 U	4.6 U	
LWG0109R006TSNPWBC00			10 U	7.5 U		10 U	9.6 U		10 U	13 U		10 U	8 U		10 U	6.4 U		10 UJ	4.6 U	
LWG0109R006TSPMWBC00			1 U	7.5 U		2.2 U	9.6 U		1.4 U	13 U		1 U	8 U		5.7 N	6.4 U		1 UJ	4.6 U	
LWG0109R006TSSBWBC00			4 U	7.5 U		4 U	9.6 U		4 U	13 U		4 U	8 U		4.2 NJ	6.4 U		4 UJ	4.6 U	
LWG01FZ0306TSCPFLC10			4 UJ	7.5 U		4 UJ	9.6 U		4 U	13 U		4 U	8 U		4 U	6.4 U		4 UJ	4.6 U	
LWG01FZ0306TSCPFLC30			4 U	7.5 U		4 UJ	9.6 U		4 U	13 U		4 UJ	8 U		4 U	6.4 U		4 U	4.6 U	
LWG01FZ0306TSCPWBC20			20 U	7.5 U		20 U	9.6 U		20 U	13 U		20 U	8 U		20 U	6.4 U		20 U	4.6 U	
LWG01FZ0306TSCPWBC30			1 UJ	7.5 U		1.7 U	9.6 U		1 U	13 U		1 U	8 U		2.1 N	6.4 U		2.2 NJ	4.6 U	
LWG01FZ0609TSBBFLC20			20 U	7.5 U		20 U	9.6 U		20 U	13 U		20 U	8 U		20 U	6.4 U		20 UJ	4.6 U	
LWG01FZ0609TSBBFLC30			4 U	7.5 U		4 U	9.6 U		4 U	13 U		4 U	8 U		4 U	6.4 U		4 UJ	4.6 U	
LWG01FZ0609TSBBWBC10			20 U	7.5 U		20 U	9.6 U		20 U	13 U		20 U	8 U		20 U	6.4 U		20 UJ	4.6 U	
LWG01FZ0609TSBCWBC20			1 U	7.5 U		1 U	9.6 U		1 U	13 U		1 U	8 U		5.7 N	6.4 U		1 UJ	4.6 U	
LWG01FZ0609TSCPFLC10			20 UJ	7.5 U		20 UJ	9.6 U		20 U	13 U		20 U	8 U		140	120	15	20 UJ	4.6 U	
LWG01FZ0609TSCPFLC20			4 U	7.5 U		4 U	9.6 U		4 U	13 U		4 U	8 U		4.2 N	6.4 U		4 U	4.6 U	
LWG01FZ0609TSCPFLC30			9.8 U	7.5 U		9.8 U	9.6 U		9.8 U	13 U		9.8 U	8 U		9.8 U	6.4 U		9.8 UJ	4.6 U	
LWG01FZ0609TSCPWBC10			4 U	7.5 U		4 U	9.6 U		4 U	13 U		4 U	8 U		4 U	6.4 U		4.9 NJ	4.6 U	6
LWG01FZ0609TSCPWBC20			4 U	7.5 U		4.6 N	9.6 U		4 U	13 U		4 U	8 U		5.1 N	6.4 U		4 UJ	4.6 U	
LWG01FZ0609TSCPWBC30			9.9 U	7.5 U		9.9 U	9.6 U		9.9 U	13 U		9.9 U	8 U		9.9 U	6.4 U		9.9 U	4.6 U	

Table A1. Pesticide Concentrations by GC/ECD and by GC/MS with Ion Trap

Sample Identifier	Chemical Name Analytical Method	Hexachloroethane			Methoxychlor			Mirex			Oxychlorthane			trans-Chlordane			trans-Nonachlor		
		SW8081A µg/kg	SW8270C µg/kg	RPD	SW8081A µg/kg	SW8270C µg/kg	RPD	SW8081A µg/kg	SW8270C µg/kg	RPD	SW8081A µg/kg	SW8270C µg/kg	RPD	SW8081A µg/kg	SW8270C µg/kg	RPD	SW8081A µg/kg	SW8270C µg/kg	RPD
LWG0107R009TSSBWBC20		4 UJ	13 U		4 U	50 U		4 U	6.2 U		4 U	32 U		4 U	8.4 U		5 NJ	11 U	
LWG0107R009TSSBWBC30		4 UJ	13 U		4 U	50 U		4 U	6.2 U		4 U	32 U		4 U	8.4 U		6.6 U	11 U	
LWG0108R010TSSBWBC10		20 U	13 U		20 U	50 U		20 U	6.2 U		20 U	32 U		36 U	8.4 U		20 U	11 U	
LWG0108R010TSSBWBC20		34 U	13 U		20 U	50 U		20 U	6.2 U		20 U	32 U		47 U	8.4 U		20 U	11 U	
LWG0108R032TSSBWBC00		4 UJ	13 U		4.1 U	50 U		4 U	6.2 U		4 U	32 U		4 U	8.4 U		21 NJ	11 U	63
LWG0102R001TSSPWBC00		4 UJ	13 U		4 U	4.8 U		4 U	6.2 U		4 U	32 U		4 U	8.4 U		8.2 U	11 U	
LWG0102R015TSSPWBC00		4 UJ	13 U		7.5 U	4.8 U		4 U	6.2 U		4.6 U	32 U		69 U	8.4 U		9 U	11 U	
LWG0103R014TSLSWBC10		6.5 NJ	13 U		6.8 U	4.8 U		4 U	6.2 U		4 U	32 U		34 U	8.4 U		9.4 U	11 U	
LWG0103R014TSNPWBC10		9.9 UJ	13 U		9.9 U	4.8 U		9.9 U	6.2 U		9.9 U	32 U		9.9 U	8.4 U		18 NJ	11 U	48.28
LWG0103R014TSNPWBC20		5.9 UJ	13 U		4.8 U	4.8 U		4 U	6.2 U		4 U	32 U		4 U	8.4 U		16 NJ	11 U	37
LWG0103R014TSPMWBC00		3.7 NJ	13 U		1.4 U	4.8 U		1 U	6.2 U		1 U	32 U		1 U	8.4 U		5.4 NJ	11 U	
LWG0103R014TSSBWBC00		4 UJ	13 U		6 N	4.8 U	22	4 U	6.2 U		4 U	32 U		21 U	8.4 U		29 NJ	11 U	90
LWG0103R034TSSPWBC00		4 UJ	13 U		4 U	4.8 U		4 U	6.2 U		4 U	32 U		4 U	8.4 U		4 U	11 U	
LWG0104R023TSSBWBC10		4 UJ	13 U		9.9 NJ	4.8 U	69	4 U	6.2 U		4 UJ	32 U		18 U	8.4 U		32 NJ	11 U	98
LWG0104R023TSSBWBC20		4 UJ	13 U		5.4 NJ	4.8 U	12	4 U	6.2 U		4 U	32 U		4 U	8.4 U		15 NJ	11 U	31
LWG0104R023TSSBWBC30		1 UJ	13 U		2.4 N	4.8 U		1 UJ	6.2 U		1 U	32 U		1 UJ	8.4 U		14 NJ	11 U	24
LWG0105R001TSSPWBC00		1 UJ	13 U		1.3 N	4.8 U		1 U	6.2 U		1 U	32 U		1.8 U	8.4 U		5.5 NJ	11 U	
LWG0105R006TSNPWBC00		4 UJ	13 U		5.4 NJ	17 J	-104	4 U	6.2 U		4 U	32 U		4 U	8.4 U		21 NJ	11 U	63
LWG0105R006TSPMWBC00		2.6 NJ	13 U		1.6 NJ	4.8 U		1 U	6.2 U		1 U	32 U		1 U	8.4 U		7.6 NJ	11 U	
LWG0105R006TSSBWBC00		1 UJ	13 U		6.2 N	4.8 U	25	1 UJ	6.2 U		3.3 NJ	32 U		1 UJ	8.4 U		14 NJ	11 U	24
LWG0106R002TSSPWBC10		4 UJ	13 U		4 U	4.8 U		4 UJ	6.2 U		4 UJ	32 U		4 U	8.4 U		4 UJ	11 U	
LWG0106R002TSSPWBC20		27 UJ	13 U		20 U	4.8 U		20 U	6.2 U		20 U	32 U		20 U	8.4 U		20 U	11 U	
LWG0106R004TSSPWBC00		4 UJ	13 U		4 U	4.8 U		4 UJ	6.2 U		4 UJ	32 U		4 U	8.4 U		5.3 NJ	11 U	
LWG0106R024TSSBWBC00		1 UJ	13 U		6.3 NJ	4.8 U	27	1 UJ	6.2 U		1 U	32 U		1 UJ	8.4 U		11 NJ	11 U	
LWG0107R003TSSPWBC00		1 UJ	13 U		3 NJ	4.8 U		1 U	6.2 U		1 U	32 U		2.9 U	8.4 U		2.6 NJ	11 U	
LWG0107R006TSCAWBC00		2.5 NJ	13 U		1 UJ	4.8 U		1 U	6.2 U		1 U	32 U		1 U	8.4 U		1 U	11 U	
LWG0107R006TSSPWBC00		1 UJ	13 U		5.6 NJ	4.8 U	15	3.7 U	6.2 U		1 U	32 U		1.2 U	8.4 U		5 U	11 U	
LWG0107R009TSLSWBC00		20 UJ	13 U		20 U	4.8 U		20 U	6.2 U		20 U	32 U		20 U	8.4 U		20 U	11 U	
LWG0107R009TSNPWBC00		19 UJ	13 U		19 U	4.8 U		19 U	6.2 U		19 U	32 U		19 U	8.4 U		19 U	11 U	
LWG0107R009TSSBWBC10		4 UJ	13 U		4 U	4.8 U		4 U	6.2 U		4 U	32 U		4 U	8.4 U		16 NJ	11 U	37
LWG0108R001TSSPWBC00		4 UJ	13 U		4 U	4.8 U		30 UJ	6.2 U		4 UJ	32 U		4 U	8.4 U		4 UJ	11 U	
LWG0108R001TSSPWBC00-DUP <sup>a</sup>			13 U			4.8 U			6.2 U			32 U			8.4 U			11 U	
LWG0108R003TSSPWBC00		4 U	13 U		7.7 NJ	4.8 U	46	4 U	6.2 U		4 U	32 U		4 U	8.4 U		4 U	11 U	

Table A1. Pesticide Concentrations by GC/ECD and by GC/MS with Ion Trap

Sample Identifier	Chemical Name Analytical Method	Hexachloroethane			Methoxychlor			Mirex			Oxychlorthane			trans-Chlordane			trans-Nonachlor		
		SW8081A µg/kg	SW8270C µg/kg	RPD	SW8081A µg/kg	SW8270C µg/kg	RPD	SW8081A µg/kg	SW8270C µg/kg	RPD	SW8081A µg/kg	SW8270C µg/kg	RPD	SW8081A µg/kg	SW8270C µg/kg	RPD	SW8081A µg/kg	SW8270C µg/kg	RPD
LWG0108R010TSLSWBC00		5.7 NJ	13 U		8.4 NJ	4.8 U	55	4 U	6.2 U		4 U	32 U		4 U	8.4 U		4 U	11 U	
LWG0108R010TSPMWBC00		1 UJ	13 U		1 U	4.8 UJ		1.2 U	6.2 UJ		1 U	32 U		2.8 U	8.4 UJ		3.6 U	11 UJ	
LWG0108R010TSSBWBC30		10 U	13 U		10 U	4.8 U		10 U	6.2 U		10 U	32 U		10 U	8.4 U		10 U	11 U	
LWG0109R001TSSPWBC00		4 UJ	13 U		4 U	4.8 U		4 UJ	6.2 U		4 UJ	32 U		4 U	8.4 U		5 NJ	11 U	
LWG0109R006TSLSWBC00		4 UJ	13 U		4 U	4.8 U		4 U	6.2 U		4 U	32 U		4 U	8.4 U		15 NJ	11 U	31
LWG0109R006TSNPWBC00		10 UJ	13 U		10 U	4.8 U		10 U	6.2 U		10 U	32 U		10 U	8.4 U		20 NJ	11 U	58
LWG0109R006TSPMWBC00		1 UJ	13 U		1.1 U	4.8 U		1 U	6.2 U		1 U	32 U		5.6 U	8.4 U		12 NJ	11 U	9
LWG0109R006TSSBWBC00		4 UJ	13 U		4.6 U	4.8 U		4 U	6.2 U		4 U	32 U		4 U	8.4 U		11 NJ	11 U	
LWG01FZ0306TSCPFLC10		4 UJ	13 U		4 U	4.8 U		87 UJ	6.2 U		4 U	32 U		4 U	8.4 U		16 NJ	11 U	37
LWG01FZ0306TSCPFLC30		4 UJ	13 U		4.8 U	4.8 U		4 U	6.2 U		4 U	32 U		4 U	8.4 U		6.3 U	11 U	
LWG01FZ0306TSCPWBC20		20 U	13 U		28 U	4.8 U		20 U	6.2 U		20 U	32 U		36 U	8.4 U		20 U	11 U	
LWG01FZ0306TSCPWBC30		2.2 NJ	13 U		2.6 N	4.8 U		1 UJ	6.2 U		1 U	32 U		1 UJ	8.4 U		8.6 N	11 U	
LWG01FZ0609TSBBFLC20		36 UJ	13 U		20 U	4.8 U		20 U	6.2 U		20 U	32 U		20 U	8.4 U		20 U	11 U	
LWG01FZ0609TSBBFLC30		4 UJ	13 U		4 U	4.8 U		4 U	6.2 U		4 U	32 U		4 U	8.4 U		4 U	11 U	
LWG01FZ0609TSBBWBC10		20 UJ	13 U		20 U	4.8 U		20 U	6.2 U		20 U	32 U		20 U	8.4 U		20 U	11 U	
LWG01FZ0609TSBCWBC20		1 UJ	13 U		1.9 U	4.8 U		1 U	6.2 U		1 U	32 U		1.4 U	8.4 U		2.2 U	11 U	
LWG01FZ0609TSCPFLC10		20 UJ	13 U		20 U	4.8 U		20 UJ	6.2 U		20 U	32 U		20 U	8.4 U		20 U	11 U	
LWG01FZ0609TSCPFLC20		4 UJ	13 U		4 U	4.8 U		4 U	6.2 U		4 U	32 U		4 U	8.4 U		4 U	11 U	
LWG01FZ0609TSCPFLC30		15 UJ	13 U		9.8 U	4.8 U		9.8 U	6.2 U		9.8 U	32 U		9.8 U	8.4 U		9.8 U	11 U	
LWG01FZ0609TSCPWBC10		4.5 NJ	13 U		4 U	4.8 U		4 U	6.2 U		4 U	32 U		4 U	8.4 U		4.8 U	11 U	
LWG01FZ0609TSCPWBC20		5.2 NJ	13 U		6.1 U	4.8 U		4 U	6.2 U		4 U	32 U		13 NJ	8.4 U	43	9.4 NJ	11 U	
LWG01FZ0609TSCPWBC30		9.9 U	13 U		9.9 U	4.8 U		9.9 U	6.2 U		9.9 U	32 U		9.9 U	8.4 U		9.9 U	11 U	

Results are provided on a whole weight basis.

Results provided in bold font are recommended for inclusion in the database. When both results are in bold, the final value will be the average of the two results.

<sup>a</sup> This sample is a laboratory duplicate of sample LWG0108R001TSSPWBC00. The results for 4,4'-DDE and 4,4'-DDT for this sample will be averaged with the result for sample LWG0108R001TSSPWBC00.

ECD - electron capture detection

GC - gas chromatography

MS - mass spectrometry

RPD - relative percent difference

SW8081A - EPA method 8081A (GC/ECD)

SW8270C - EPA method 8270C (GC/MS) with ion trap

µg/kg - micrograms per kilogram

J - concentration of the associated result is estimated

N - the analyte is tentatively identified; the result may be a false positive

NJ - the analyte is tentatively identified and the concentration of the associated result is estimated

U - result is undetected at the detection limit shown

UJ - result is undetected at an estimated detection limit



Table A2. Pesticide Concentrations and Qualifiers for Samples Analyzed Only by GC/ECD

Sample ID	Chemical Name Analytical Method	Lipids PSEP percent	Sum of 9 Aroclors Calculated µg/kg	2,4'-DDD SW8081A µg/kg	2,4'-DDE SW8081A µg/kg	2,4'-DDT SW8081A µg/kg	4,4'-DDD SW8081A µg/kg	4,4'-DDE SW8081A µg/kg	4,4'-DDT SW8081A µg/kg	Aldrin SW8081A µg/kg	alpha- Hexachlorocyclo hexane SW8081A µg/kg
LWG0102R001TSCRWBC00		0.45	21	1 U	1 UJ	7.6 NJ	1 U	2.9 N	1.1 U	1 U	1 U
LWG0102R015TSCRWBC00		0.93	28	1 U	1 UJ	9.5 NJ	1 U	4.1	1 U	1 U	1 U
LWG0103R001TSCRWBC00		0.85	5.7 U	1 U	1 UJ	2.2 N	1 U	4.8	1 U	1 U	1 U
LWG0103R001TSSPWBC00		6	144	1.1 U	1.4 UJ	8.6 NJ	5.2 NJ	19 U	16 J	1.8 U	1 U
LWG0103R002TSCRWBC00		1.1	5.2 U	1 U	1 UJ	2.1 NJ	1 U	3.8	1 U	1 U	1 U
LWG0103R002TSSPWBC10		4.4	121	1.4 U	1.2 UJ	8.4 NJ	6.7 N	21 U	19	1.6 U	1 U
LWG0103R002TSSPWBC20		3.4	170	1.2 U	1.4 U	9.7 NJ	7.2 N	34 U	37	1 U	1 U
LWG0103R003TSCRWBC00		0.81	8.5 U	1 U	1 UJ	3.5 NJ	1 U	3.5 N	3.4 NJ	1 U	1 U
LWG0103R004TSCRWBC00		0.9	7 U	1 U	1 UJ	2.9 J	1 U	3.7 N	2.3 NJ	1 U	1 U
LWG0103R004TSSPWBC10		5.5	324	2.4 U	1.4 U	30	5.7 N	20 UJ	54	1.6 U	1 U
LWG0103R004TSSPWBC20		4.8	305	2.9 U	1.7 U	27 J	8.3 N	22 NJ	50	1 U	1 U
LWG0103R005TSCRWBC00		0.7	280	1 U	1 UJ	6.1 UJ	1 U	3.5 J	3.1 U	1 U	1 U
LWG0103R005TSSPWBC00		2.4	360	2.8 U	1 U	34 NJ	7.7 N	25 NJ	75	1 U	1 U
LWG0103R014TSLSWBC20		8.2	350	7.8 U	4 U	14 NJ	31 J	93	32 J	4 U	4 U
LWG0103R014TSSBFLC00		0.9	60	1.2 U	1 U	4.6 J	4.1 J	25	8.3	1 U	1 U
LWG0103R032TSCRWBC00		0.68	4.5 U	1 UJ	1 UJ	2.1 NJ	1 U	3.4	1.5 N	1 U	1 U
LWG0103R032TSSPWBC00		4.7	172	1.2 U	1.6 U	7.4 NJ	7.3 N	18 NJ	23 J	1.1 U	1 U
LWG0104R002TSCRWBC00		0.9	5 U	1 U	1 UJ	1.9 NJ	1 U	4	1 U	1 U	1 U
LWG0104R002TSSPWBC00		4.7	156	12 U	1.1 U	9 NJ	5.6 J	16 NJ	26 J	1 U	1 U
LWG0104R003TSCRWBC00		1.1	4 U	1 U	3.3 NJ	5.5 U	1.2 NJ	3.9	9.5	1 U	1 U
LWG0104R003TSSPWBC00		4.1	196	1.3 U	1 U	9.8 NJ	5.3 N	14 NJ	21 J	1.1 U	1 U
LWG0104R004TSCRWBC10		0.75	2 U	1 U	1 UJ	2.1 N	1 U	6.9	1 U	1 U	1 U
LWG0104R004TSCRWBC20		0.33	1.7 U	1 U	1 UJ	1 U	1 U	2.1	1 U	1 U	1 U
LWG0104R004TSSPWBC00		3.9	123	2.1 U	1.2 U	5.4 NJ	12 J	32 NJ	26 J	1.1 U	1 U
LWG0105R001TSCRWBC00		0.79	4 U	1 U	1 UJ	1.7 NJ	1 U	5.2	1 U	1 U	1 U
LWG0105R003TSCRWBC00		1.2	27	1 U	1.4 NJ	2 U	1 U	6.6	1 U	1 U	1 U
LWG0105R006TSLSWBC00		8.1	95	16 NJ	1 U	9.3 NJ	20	79	27	1 U	1 U
LWG0105R006TSSBFLC00		1.1	46	1.1 U	1 U	2.9 NJ	4.2 J	14	6.6	1 U	1 U
LWG0105R020TSSPWBC00		4.7	132	1.5 U	1.8 U	4.3 U	11 J	27 U	22 J	1.8 U	1 U
LWG0106R001TSCRWBC00		1	2.6 U	1 U	1 UJ	1.2 N	1 U	4.6	1.1 U	1 U	1 U
LWG0106R001TSSPWBC00		5.5	62	2.1 NJ	1.9 U	7.7 NJ	16 J	29 NJ	27 J	1 U	1 U
LWG0106R002TSCAWBC00		1	77	2.6 N	1.1 U	3.9 U	2.2 N	7.5 N	8.3 U	1 U	1 U
LWG0106R004TSCRWBC10		0.57	5.8 U	1 U	1 UJ	1.6 N	2.9 J	8.8	1.5 N	1 U	1 U
LWG0106R004TSCRWBC20		0.16	2.6 U	1 U	1 UJ	1.1 NJ	9.6 NJ	3.3	1 U	1 U	1 U
LWG0106R024TSSBFLC00		0.81	39	1.4 NJ	1 U	2 NJ	5	12	5.6	1 U	1 U
LWG0106R031TSCRWBC00		0.47	4.2 U	1 U	1 NJ	1.4 NJ	1 U	3.2	1.6 NJ	1 U	1 U
LWG0107R003TSCAWBC00		1.7	62	14 J	2.5 NJ	20	30	26	49	1.1 U	1 U
LWG0107R003TSCRWBC00		0.62	39	2 UJ	2 U	3.5 NJ	3.1 J	15 J	14 J	2 U	2 U

Table A2. Pesticide Concentrations and Qualifiers for Samples Analyzed Only by GC/ECD

Sample ID	Chemical Name Analytical Method	Lipids PSEP percent	Sum of 9 Aroclors Calculated µg/kg	2,4'-DDD SW8081A µg/kg	2,4'-DDE SW8081A µg/kg	2,4'-DDT SW8081A µg/kg	4,4'-DDD SW8081A µg/kg	4,4'-DDE SW8081A µg/kg	4,4'-DDT SW8081A µg/kg	Aldrin SW8081A µg/kg	alpha- Hexachlorocyclo hexane SW8081A µg/kg
LWG0107R004TSCRWBC00		0.98	3.5 U	1 U	1 UJ	1.5 NJ	1 U	6.4	1 U	1 U	1 U
LWG0107R006TSCRWBC00		0.63	45	4.3 NJ	1 U	2.6 N	17 NJ	51	10	1 U	1 U
LWG0108R001TSCRWBC00		1.3	59	1 U	1 U	6.6 NJ	1 UJ	6.3 J	4.1 UJ	1 U	1 U
LWG0108R002TSCRWBC00		0.75	16	1 U	1 U	2.9 NJ	1 UJ	3 J	1 UJ	1 U	1 U
LWG0108R002TSSPWBC00		2.9	157	1.2 U	1 UJ	10 NJ	4.6 NJ	18 U	21 J	1 U	1 U
LWG0108R003TSCRWBC00		1	43	1 U	1 U	1.8 U	1 UJ	3.4 NJ	2.4 UJ	1 U	1 U
LWG0108R010TSNPWBC00		5.8	670	9.8 U	9.8 U	21 U	17 NJ	82	53 J	9.8 U	9.8 U
LWG0108R032TSSBFLC00		0.96	93	1.1 U	1 U	5.2 NJ	2.7 J	16	10	1 U	1 U
LWG0109R001TSCRWBC10		0.51	46	1 U	1 U	1.4 U	1 UJ	1.6 J	2.9 UJ	1 U	1 U
LWG0109R001TSCRWBC20		0.71	49	1 U	1 U	1.8 U	1 UJ	1.9 NJ	2.9 UJ	1 U	1 U
LWG0109R002TSCRWBC00		0.94	110	1 U	1 U	2.2 U	1 UJ	2.5 J	4.7 UJ	1 U	1 U
LWG0109R002TSSPWBC00		4.3	670	9.6 U	9.6 U	81 NJ	9.6 U	11 U	81	9.6 U	9.6 U
LWG0109R006TSSBFLC00		0.32	72	1 U	1 U	3.1 NJ	1.9 N	13	6.2 J	1 U	1 U
LWG01FZ0306TSBBFLC10		0.93	53	1.1 NJ	1 UJ	2.6 N	2.1 J	11	5.1 J	1 U	1 U
LWG01FZ0306TSBBFLC20		1.1	37	1 U	1 U	1.7 N	2.7 J	9.9 J	3.9 J	1 U	1 U
LWG01FZ0306TSBBFLC30		1.3	56	1 U	1 U	2.5 J	3.8 J	15 J	4.6 J	1 U	1 U
LWG01FZ0306TSBBWBC10		2	67	1.6 U	1 UJ	3.3 N	6.9 J	32	5.3 J	1 U	1 U
LWG01FZ0306TSBBWBC20		2.3	90	2.2 U	1.6 UJ	8.1 NJ	9 NJ	70	15 N	1 U	1 U
LWG01FZ0306TSBBWBC30		2.4	125	1.9 U	1 UJ	14 N	7.4 J	42 J	24	1 U	1 U
LWG01FZ0306TSBCFLC10		1.8	22.2	1 U	1 U	1 U	1.8 J	5.5	1.5 J	1 U	1 U
LWG01FZ0306TSBCFLC20		1.6	22.6	1 U	1 U	1 U	2.4 J	6.5	1.5 J	1 U	1 U
LWG01FZ0306TSBCWBC10		3.7	85	3.1 U	1 U	4.7 NJ	7.9 J	38	8.6 J	1 U	1 U
LWG01FZ0306TSBCWBC20		3.5	90	3.7 U	1.1 U	5 NJ	11 J	37 J	10 J	1 UJ	1 U
LWG01FZ0306TSCPFLC20		3.4	350	9.4 U	4 U	24 N	23 NJ	87 J	39 NJ	4 U	4 U
LWG01FZ0306TSCPWBC10		7.1	300	19 NJ	1 U	23 NJ	27 J	81 J	24 J	1 U	1 U
LWG01FZ0609TSBBFLC10		0.96	117	1.4 NJ	1 U	3.1 NJ	1.4 N	6.6 J	8.4 J	1 U	1 U
LWG01FZ0609TSBBWBC20		2.6	130	3.4 U	1.3 UJ	8.1 NJ	12	53 NJ	25	1 U	1 U
LWG01FZ0609TSBBWBC30		3.8	314	12 NJ	4 U	12 NJ	13	58	46	4 U	4 U
LWG01FZ0609TSBCFLC10		0.99	32	1 U	1 U	1.1 NJ	2.7 J	7.8	2.1 J	1 U	1 U
LWG01FZ0609TSBCFLC20		1.2	19.6	1 U	1 U	1.1 NJ	2 N	7.1	2.3 NJ	1 U	1 U
LWG01FZ0609TSBCWBC10		6.5	109	2 U	1.1 U	6.6 NJ	11 J	67	15 J	1.3 U	1.4 NJ
LWG1A02R102TSSCWBC00		2.2	30	1 U	1 U	1.7 NJ	4.6 N	20	4.4 N	1 U	1 U
LWG1A02R112TSSCWBC00		3.3	100	1.3 U	1 U	5.6 N	5.2 N	24	7 N	1 U	1 U
LWG1A02R113TSSCWBC00		3	32	1 U	1 U	1.8 NJ	4 J	19	4.9 NJ	1 U	1 U
LWG1A03R118TSSCWBC00		2.2	54	1 U	1 U	2.9 NJ	4.2 J	19	6.4 J	1 U	1 U
LWG1A03R125TSSCWBC00		3.6	58	1 U	1 U	3.2 NJ	6.3 J	21	7.6 J	1 U	1 U
LWG1A04R126TSSCWBC00		3.1	61	1.4 U	1 U	3.3 J	8.1 J	24	7.4 J	1 U	1 U

Table A2. Pesticide Concentrations and Qualifiers for Samples Analyzed Only by GC/ECD

Sample ID	Chemical Name Analytical Method	beta-Endosulfan SW8081A µg/kg	beta- Hexachlorocyclo hexane SW8081A µg/kg	cis-Nonachlor SW8081A µg/kg	delta- Hexachlorocyclo hexane SW8081A µg/kg	Dieldrin SW8081A µg/kg	Endosulfan sulfate SW8081A µg/kg	Endrin SW8081A µg/kg	Endrin aldehyde SW8081A µg/kg	Endrin ketone SW8081A µg/kg	gamma- Hexachlorocyclo hexane SW8081A µg/kg
LWG0102R001TSCRWBC00		1 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U
LWG0102R015TSCRWBC00		1 U	1 U	1 UJ	1 U	1 U	1 U	1.8 NJ	1 U	1 U	1 U
LWG0103R001TSCRWBC00		1 N	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U
LWG0103R001TSSPWBC00		1 U	4.3 NJ	3.6 UJ	1 UJ	4 NJ	1.3 NJ	1.1 U	1.3 UJ	1 UJ	2.6 NJ
LWG0103R002TSCRWBC00		1.4 N	1 U	1 UJ	1 U	1 U	1 U	1.3 NJ	1 U	1 U	1 U
LWG0103R002TSSPWBC10		1.1 U	4.1 NJ	4.9 UJ	1 NJ	2.8 NJ	1 U	1.4 U	1.3 UJ	1 UJ	1.7 NJ
LWG0103R002TSSPWBC20		1 U	6.2 NJ	5.1 U	1 U	4.6 N	1 U	1.2 U	1.3 UJ	1 UJ	1.3 NJ
LWG0103R003TSCRWBC00		1.1 N	1 U	1 UJ	1 U	1 U	1 U	1.1 N	1 U	1 U	1 U
LWG0103R004TSCRWBC00		3.1 J	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U
LWG0103R004TSSPWBC10		1 U	4.5 NJ	3.5 U	1 U	15 NJ	1.2 NJ	2.9 U	3.6 UJ	1 UJ	3.1 NJ
LWG0103R004TSSPWBC20		1.1 U	2.9 NJ	6.3 U	1 U	15 NJ	1 UJ	2.5 U	3.4 UJ	1 UJ	2.5 NJ
LWG0103R005TSCRWBC00		1.6 N	1 U	1 UJ	1 U	1 U	1 U	2.8 NJ	1.2 U	1 U	1 U
LWG0103R005TSSPWBC00		3.1 U	1 UJ	6.4 U	1 U	19 NJ	1 U	2.2 U	4 UJ	1 UJ	1 U
LWG0103R014TSLSWBC20		4 U	4.2 U	17 U	4 U	5.1 U	4 U	4 U	4 U	4 U	4.5 NJ
LWG0103R014TSSBFLC00		1 U	4.5 N	2.9 U	1 U	3.3 NJ	1 U	1 U	2 NJ	1 U	1 U
LWG0103R032TSCRWBC00		1 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U
LWG0103R032TSSPWBC00		1 U	4.1 NJ	5.1 U	1 U	3.2 NJ	1 U	1 U	1.2 UJ	1 UJ	1.7 N
LWG0104R002TSCRWBC00		1 UJ	1 U	1 UJ	1 U	1 U	1 U	1 UJ	1 U	1 U	1 U
LWG0104R002TSSPWBC00		3.6 U	3.8 NJ	4.6 U	1 U	5.9 N	1 U	1 U	1.6 UJ	1 UJ	1.5 NJ
LWG0104R003TSCRWBC00		1.6 N	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U
LWG0104R003TSSPWBC00		1 U	2.5 NJ	4.1 U	1 U	7.1 NJ	1 U	1.1 U	1.3 UJ	1 UJ	1 U
LWG0104R004TSCRWBC10		1 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U
LWG0104R004TSCRWBC20		1 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U
LWG0104R004TSSPWBC00		1 U	3.4 NJ	8.4 U	1 U	2.6 NJ	1 U	1 U	1 UJ	1 UJ	1.2 NJ
LWG0105R001TSCRWBC00		1.7 NJ	1 U	1 UJ	2.8 U	1 U	1 U	1 U	1 U	1 U	1 U
LWG0105R003TSCRWBC00		1.3 N	1 U	1 UJ	1 U	1 U	1 U	1.2 N	1 U	1 U	1 U
LWG0105R006TSLSWBC00		1.2 U	3.3 UJ	11 U	1 U	1 U	1.3 U	1 U	2 U	1 U	3.5 U
LWG0105R006TSSBFLC00		1 U	1 U	2.9 U	1 U	1 U	1 U	1 U	1.5 NJ	1 U	1 U
LWG0105R020TSSPWBC00		1 U	3.9 NJ	7.8 U	1 U	2.8 N	1 U	1.1 U	1 UJ	1 UJ	1.7 NJ
LWG0106R001TSCRWBC00		2.1 J	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U
LWG0106R001TSSPWBC00		1 UJ	5.3 NJ	11 U	1.6 NJ	3.4 J	1 U	1.2 U	1.4 UJ	1 UJ	2.7 NJ
LWG0106R002TSCAWBC00		1 U	1.2 NJ	1.2 U	1 U	1 U	1 UJ	1 U	1 UJ	1 U	1 U
LWG0106R004TSCRWBC10		1 U	1 U	1.4 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U
LWG0106R004TSCRWBC20		1 U	1 U	1.7 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U
LWG0106R024TSSBFLC00		1 U	1 U	2.4 U	1 U	1 U	1 U	1 U	1 UJ	1 U	1 U
LWG0106R031TSCRWBC00		1.3 N	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U
LWG0107R003TSCAWBC00		1 U	1 UJ	12 U	1 U	1 U	1 UJ	1 U	0.39 J	1 U	1 U
LWG0107R003TSCRWBC00		2 UJ	2 UJ	2.2 U	2 U	2 UJ	2 UJ	2 UJ	2 UJ	2 UJ	2 U

Table A2. Pesticide Concentrations and Qualifiers for Samples Analyzed Only by GC/ECD

Sample ID	Chemical Name Analytical Method	beta- Hexachlorocyclo		delta- Hexachlorocyclo		Dieldrin	Endosulfan sulfate	Endrin	Endrin aldehyde	Endrin ketone	gamma- Hexachlorocyclo
		beta-Endosulfan SW8081A	hexane SW8081A	cis-Nonachlor SW8081A	hexane SW8081A						
		µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
LWG0107R004TSCRWBC00		2.2 J	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U
LWG0107R006TSCRWBC00		1 U	1 UJ	2.3 U	1 U	1 U	1 U	1.3 U	1 U	1 U	1 U
LWG0108R001TSCRWBC00		1 UJ	1 UJ	1 U	1 U	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 U
LWG0108R002TSCRWBC00		1 UJ	1 UJ	1 U	1 U	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 U
LWG0108R002TSSPWBC00		1 U	2 NJ	3.3 UJ	1 UJ	3.4 NJ	1 UJ	1.3 U	1.5 UJ	1 UJ	1.1 NJ
LWG0108R003TSCRWBC00		1.8 UJ	1 UJ	1 U	1 U	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 U
LWG0108R010TSNPWBC00		9.8 U	9.8 U	9.8 U	9.8 U	9.8 U	9.8 U	9.8 U	9.8 U	9.8 U	9.8 U
LWG0108R032TSSBFLC00		1 U	1 U	1.8 U	1 U	1.4 NJ	1 U	1 U	1 UJ	1 U	1 U
LWG0109R001TSCRWBC10		1 UJ	1 UJ	1 U	1 U	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 U
LWG0109R001TSCRWBC20		1.1 UJ	1 UJ	1.4 U	1 U	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 U
LWG0109R002TSCRWBC00		1 UJ	1 UJ	1.8 U	1 U	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 U
LWG0109R002TSSPWBC00		9.6 U	9.6 U	9.6 U	9.6 U	9.6 U	9.6 U	9.6 U	9.6 U	9.6 U	9.6 U
LWG0109R006TSSBFLC00		1 U	1 U	1.3 U	1 U	1 NJ	1 U	1 U	1 UJ	1 U	1 U
LWG01FZ0306TSBBFLC10		1 U	1 UJ	1.5 U	1 U	1 U	1 U	1 U	1 UJ	1 U	1 U
LWG01FZ0306TSBBFLC20		1 U	1 U	1.6 U	1 U	1 U	1 U	1 U	1 UJ	1 U	1 U
LWG01FZ0306TSBBFLC30		1 U	1.4 U	2 U	1 U	2.1 NJ	1 U	1 U	1 UJ	1 U	1 U
LWG01FZ0306TSBBWBC10		2.3 NJ	1 U	3 UJ	1 U	1.2 NJ	1 U	1 U	1 UJ	1 UJ	1 U
LWG01FZ0306TSBBWBC20		8.6 NJ	1.9 U	11 UJ	1 U	2.1 U	1 U	1 U	1.7 UJ	1 UJ	1.4 N
LWG01FZ0306TSBBWBC30		1 U	2.3 U	5.5 UJ	1 U	2.6 NJ	1 U	1.2 U	3.7 UJ	1 UJ	1.5 N
LWG01FZ0306TSBCFLC10		1 U	1 U	1.2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
LWG01FZ0306TSBCFLC20		1 U	1 U	1.6 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
LWG01FZ0306TSBCWBC10		1 U	2.3 UJ	5.8 U	1 U	1.9 U	1.1 NJ	1 U	1.1 U	1 U	1.6 U
LWG01FZ0306TSBCWBC20		1 U	1.5 UJ	6.9 U	1 U	1.8 U	1 UJ	1 U	1.4 U	1 U	1.5 U
LWG01FZ0306TSCPFLC20		4 UJ	4 UJ	17 U	4 U	4 UJ	4 UJ	4 UJ	4 UJ	4 UJ	4 UJ
LWG01FZ0306TSCPWBC10		1 UJ	1.5 UJ	17 U	1 U	1 UJ	1 UJ	1 UJ	2 UJ	1 UJ	1 U
LWG01FZ0609TSBBFLC10		1 U	1 UJ	1.1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	1 U
LWG01FZ0609TSBBWBC20		5 U	2.3 U	8.7 UJ	1 U	2.1 U	1 U	1 U	1.1 UJ	1 UJ	1.9 N
LWG01FZ0609TSBBWBC30		4 U	6.8 U	8.8 UJ	4 U	4 U	4 U	4 U	4 U	4 U	4 U
LWG01FZ0609TSBCFLC10		1 U	1 U	1.6 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
LWG01FZ0609TSBCFLC20		1 U	1 U	1.5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
LWG01FZ0609TSBCWBC10		1.3 U	3.8 U	7.3 U	2.3 NJ	2.5 NJ	1 U	1.3 U	1 UJ	1 U	1 U
LWG1A02R102TSSCWBC00		4.3 N	1 U	2.1 U	1 U	1.5 U	1 U	1 U	1 UJ	1 U	1 U
LWG1A02R112TSSCWBC00		1.3 U	1 U	3.5 U	1 U	2.7 U	1 U	1 U	1 UJ	1 U	1 U
LWG1A02R113TSSCWBC00		1.8 N	1.2 U	2.1 U	1 U	1.7 U	1 U	1 U	1 UJ	1 U	1 U
LWG1A03R118TSSCWBC00		2.4 N	1 U	2.9 U	1 U	2.1 N	1 U	1 U	1 UJ	1 U	1 U
LWG1A03R125TSSCWBC00		3.1 NJ	1 U	3.5 U	1 U	2.6 N	1 U	1 U	1 UJ	1 U	1 U
LWG1A04R126TSSCWBC00		3.3 N	1 U	3.4 U	1 U	2.7 U	1 U	1 U	1 UJ	1 U	1 U

Table A2. Pesticide Concentrations and Qualifiers for Samples Analyzed Only by GC/ECD

Chemical Name Analytical Method	Heptachlor SW8081A	Heptachlor epoxide SW8081A	Hexachloro benzene SW8081A	Hexachloro butadiene SW8081A	Hexachloroethane SW8081A	Methoxychlor SW8081A	Mirex SW8081A	Oxychlorthane SW8081A	trans-Chlordane SW8081A	trans-Nonachlor SW8081A
Sample ID	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
LWG0102R001TSCRWBC00	1 U	1 U	1 U	1 UJ	1.3 NJ	1 U	1 UJ	1 UJ	1.1 NJ	1 UJ
LWG0102R015TSCRWBC00	1 U	1 U	1 U	1 UJ	1 UJ	1 U	1 UJ	1 UJ	1.3 NJ	1 UJ
LWG0103R001TSCRWBC00	1 U	1 U	1 U	1 UJ	1 UJ	1 U	1 UJ	1 UJ	1 U	1 UJ
LWG0103R001TSSPWBC00	1.3 U	3.2 NJ	5.8 NJ	1.6 NJ	2.5 NJ	1.2 NJ	1 U	1 U	1.5 U	5.5 NJ
LWG0103R002TSCRWBC00	1 U	1 U	1 U	1 UJ	3.6 NJ	1 U	1 UJ	1 UJ	1 U	1 UJ
LWG0103R002TSSPWBC10	1 U	1.1 U	3.6 N	1 UJ	1 UJ	1.8 NJ	1 U	1 U	4.4 NJ	5 NJ
LWG0103R002TSSPWBC20	1 U	1 U	3.2 N	1 UJ	1 UJ	1.4 N	1 U	1 U	1 U	6.5 NJ
LWG0103R003TSCRWBC00	1 U	1 U	1 U	1.2 UJ	1 UJ	1 U	1 UJ	1 UJ	1 U	1 UJ
LWG0103R004TSCRWBC00	1 U	1 U	1 U	1 UJ	3.3 NJ	1 U	1 UJ	1 UJ	1 U	1 UJ
LWG0103R004TSSPWBC10	1 U	2	5.5 NJ	1.4 NJ	1.5 NJ	2.8 N	1.1 U	1.9 U	1 U	3.1 U
LWG0103R004TSSPWBC20	1 U	2 NJ	4.6 NJ	1 UJ	1 UJ	2.9 N	1.2 U	1.3 U	2.1 U	3.5 U
LWG0103R005TSCRWBC00	1 U	1 U	1 U	1 UJ	1 UJ	1 U	1 UJ	1 UJ	1 N	1 UJ
LWG0103R005TSSPWBC00	1 U	1 U	1.5 N	1 UJ	1 UJ	1.1 U	1 U	1 U	1 U	3.7 U
LWG0103R014TSLSWBC20	4 U	4 U	4 U	4 U	4.8 NJ	4 U	4 U	4 U	4 U	9.6 NJ
LWG0103R014TSSBFLC00	1 U	1 U	1.3 U	1 UJ	1 UJ	1 U	1 U	1 U	2.4 U	4.1 NJ
LWG0103R032TSCRWBC00	1 U	1 U	1 U	1 UJ	1.2 NJ	1 U	1 UJ	1 UJ	1 U	1 UJ
LWG0103R032TSSPWBC00	1 U	1 U	4.3 NJ	1 U	1 UJ	3.2 NJ	1 U	1 U	2.5 U	5.6 NJ
LWG0104R002TSCRWBC00	1 U	1 U	1 U	1 UJ	2.5 NJ	1 U	1 UJ	1 UJ	1 U	1 UJ
LWG0104R002TSSPWBC00	1 U	1 U	4 NJ	1 UJ	1 UJ	1 U	1 U	1 U	1.7 U	5.2 NJ
LWG0104R003TSCRWBC00	1 U	1 U	1 U	1 UJ	1 NJ	1 U	1 UJ	1 UJ	1 U	1 UJ
LWG0104R003TSSPWBC00	1 U	1 U	3.2 NJ	1 UJ	1 UJ	7.6 N	1 U	1 U	1.6 U	6.1 NJ
LWG0104R004TSCRWBC10	1 U	1 U	1 U	1 UJ	1 UJ	1 U	1 UJ	1 UJ	2.7 NJ	1 UJ
LWG0104R004TSCRWBC20	1 U	1 U	1 U	1 UJ	1 UJ	1 U	1 UJ	1 UJ	1 U	1 UJ
LWG0104R004TSSPWBC00	1 U	1 U	4 NJ	1 U	1 UJ	1.3 NJ	1 U	1 U	1 U	4.8 N
LWG0105R001TSCRWBC00	1 U	1 U	1 U	1 UJ	1 UJ	1 U	1 UJ	1 UJ	1.9 NJ	1 UJ
LWG0105R003TSCRWBC00	1 U	1 U	1 U	1 UJ	3.8 N	1 U	1 UJ	1 UJ	1 U	1 UJ
LWG0105R006TSLSWBC00	1 U	1 U	2.7 NJ	1.1 UJ	2.6 UJ	2.5 U	1 U	2.3 N	1 U	6.3 NJ
LWG0105R006TSSBFLC00	1 U	1 U	1 U	1 UJ	1 UJ	1 U	1 U	1 U	1.4 U	2.4 U
LWG0105R020TSSPWBC00	1 U	1 U	4.5 NJ	1 UJ	1 UJ	1.5 NJ	1 U	1 U	3.6 U	4.8 NJ
LWG0106R001TSCRWBC00	1 U	1 U	1 U	1 UJ	1 UJ	1 U	1 UJ	1 UJ	1 U	1 UJ
LWG0106R001TSSPWBC00	1.2 U	1.4 U	6.6 NJ	2 J	1 UJ	1.7 NJ	1 U	1 U	3.2 U	5 NJ
LWG0106R002TSCAWBC00	1 U	2.1 N	1.4 U	1 UJ	2.7 NJ	1.6 UJ	1 U	1 U	1.8 NJ	2.7 NJ
LWG0106R004TSCRWBC10	1 U	1 U	1 U	1 UJ	1 UJ	1 U	1 UJ	1 UJ	1 U	1 UJ
LWG0106R004TSCRWBC20	1 U	1 U	1 U	1 UJ	1 UJ	1 U	1 UJ	1 UJ	1 U	1 UJ
LWG0106R024TSSBFLC00	1 U	1 U	1 U	1 UJ	1 UJ	1 U	1 U	1 U	1 U	1.8 NJ
LWG0106R031TSCRWBC00	1 U	1 U	1 U	1 UJ	1.3 NJ	1 U	1 UJ	1 UJ	1 U	1 UJ
LWG0107R003TSCAWBC00	1 U	1.3 NJ	1 U	1 UJ	2.6 NJ	1 UJ	1 U	1 U	1.1 NJ	1 U
LWG0107R003TSCRWBC00	2 U	2 U	2 U	2 UJ	2 UJ	2 U	2 UJ	2 U	2 UJ	2 UJ

Table A2. Pesticide Concentrations and Qualifiers for Samples Analyzed Only by GC/ECD

Chemical Name Analytical Method	Heptachlor SW8081A	Heptachlor epoxide SW8081A	Hexachloro benzene SW8081A	Hexachloro butadiene SW8081A	Hexachloroethane SW8081A	Methoxychlor SW8081A	Mirex SW8081A	Oxychlorthane SW8081A	trans-Chlordane SW8081A	trans-Nonachlor SW8081A
Sample ID	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
LWG0107R004TSCRWBC00	1 U	1 U	1 U	1 UJ	3 NJ	1 U	1 UJ	1 UJ	1 U	1 UJ
LWG0107R006TSCRWBC00	1 U	1 U	1 U	1 UJ	2.1 NJ	1 U	1 U	1 U	1 U	1 U
LWG0108R001TSCRWBC00	1 U	1 U	1 U	1 UJ	1.3 NJ	1 U	1 UJ	1 U	1 UJ	1 U
LWG0108R002TSCRWBC00	1 U	1 U	1 U	1 UJ	1 UJ	1 U	1 UJ	1 U	1 UJ	1 U
LWG0108R002TSSPWBC00	1 U	1 U	3.1 NJ	1 UJ	2.1 NJ	2.3 NJ	1 U	1 U	1.6 U	5.8 NJ
LWG0108R003TSCRWBC00	1 U	1 U	1 U	1 UJ	1.5 NJ	1 U	1 UJ	1 U	1 UJ	1 U
LWG0108R010TSPNPWBC00	9.8 U	9.8 U	9.8 U	9.8 UJ	9.8 UJ	10 U	9.8 U	9.8 U	9.8 U	14 U
LWG0108R032TSSBFLC00	1 U	1 U	1 U	1 UJ	1 UJ	1 U	1 U	1 U	1 U	3 NJ
LWG0109R001TSCRWBC10	1 U	1 U	1 U	1 UJ	1.1 NJ	1 U	1 UJ	1 U	1 UJ	1 UJ
LWG0109R001TSCRWBC20	1 U	1 U	1 U	1 UJ	1.2 UJ	1 U	1 UJ	1 U	1 UJ	1 U
LWG0109R002TSCRWBC00	1 U	1 U	1 U	1 UJ	1 NJ	1 U	1 UJ	1 U	1 UJ	1 U
LWG0109R002TSSPWBC00	9.6 U	9.6 U	9.6 U	9.6 UJ	9.6 UJ	9.6 U	9.6 U	9.6 U	9.6 U	9.6 U
LWG0109R006TSSBFLC00	1 U	1 U	1 U	1 UJ	1 UJ	1 U	1 U	1 U	1 U	1 U
LWG01FZ0306TSBBFLC10	1 U	1 U	1 U	1 UJ	1 UJ	1 UJ	1 U	1 U	1 U	1.3 N
LWG01FZ0306TSBBFLC20	1 U	1 U	1 U	1 UJ	1 UJ	1 U	1 U	1 U	1 U	1.2 NJ
LWG01FZ0306TSBBFLC30	1 U	1 U	1 U	1 UJ	1 UJ	1 U	1 U	1 U	1 U	1.6 NJ
LWG01FZ0306TSBBWBC10	1 U	1 U	1 U	1 UJ	1 UJ	1.1 NJ	1 U	1 U	1 U	1.8 NJ
LWG01FZ0306TSBBWBC20	1 U	1 U	1.6 NJ	1 UJ	1 UJ	1 UJ	1 U	1 U	25	15
LWG01FZ0306TSBBWBC30	1 U	1 U	1.1 NJ	1 UJ	1 UJ	1 U	1 U	1 U	1 U	3.7 NJ
LWG01FZ0306TSBCFLC10	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
LWG01FZ0306TSBCFLC20	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.1 NJ
LWG01FZ0306TSBCWBC10	1.8 N	1 U	1.1 U	1.4 NJ	1 UJ	1 U	1 U	2.3 N	1 U	3.2 NJ
LWG01FZ0306TSBCWBC20	1 U	1 UJ	1 U	1.3 NJ	1 UJ	1 U	1 U	2.2 NJ	1 U	3.5 NJ
LWG01FZ0306TSCPFLC20	4 U	4 U	4 U	4 UJ	4 UJ	7.2 NJ	4 UJ	4 U	4 U	4 U
LWG01FZ0306TSCPWBC10	1.1 U	1 U	2.2 NJ	1 UJ	2 UJ	4.2 N	1 UJ	1.1 NJ	1 UJ	10 NJ
LWG01FZ0609TSBBFLC10	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	1 U	1 U	1.6 NJ
LWG01FZ0609TSBBWBC20	1 U	1 U	1.4 N	1 UJ	2 NJ	1.1 U	1 U	1 U	1 U	5.6 NJ
LWG01FZ0609TSBBWBC30	4 U	4 U	4 U	4 U	4 UJ	4 U	4 UJ	4 UJ	4 U	4 UJ
LWG01FZ0609TSBCFLC10	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
LWG01FZ0609TSBCFLC20	1 U	1 U	1 U	1 UJ	1 UJ	1 U	1 U	1 U	1 U	1 U
LWG01FZ0609TSBCWBC10	1.3 U	1 U	8.1 N	2.3 NJ	1 UJ	2.5 U	1 U	1 U	3.7 N	1.8 U
LWG1A02R102TSSCWBC00	1 U	1 U	1 U	1 UJ	1 UJ	1.2 U	1 U	1 U	1 U	1.6 NJ
LWG1A02R112TSSCWBC00	1 U	1 U	1.3 N	1 UJ	1 UJ	19 U	1 U	1 U	1 U	3.8 NJ
LWG1A02R113TSSCWBC00	1 U	1 U	1 U	1 UJ	1 UJ	19 U	1 U	1 U	1 U	1.8 NJ
LWG1A03R118TSSCWBC00	1 U	1 U	1 U	1 UJ	1 UJ	1 U	1 U	1 U	2 NJ	2.5 NJ
LWG1A03R125TSSCWBC00	1 U	1 U	1.4 NJ	1 UJ	1 UJ	1 U	1 U	1 U	2.9 NJ	3.3 NJ
LWG1A04R126TSSCWBC00	1 U	1 U	1.9 NJ	1 UJ	1 UJ	1 U	1 U	1 U	2.9 NJ	3.3 NJ

µg/kg - micrograms per kilogram

J - concentration of the associated result is estimated

N - the analyte is tentatively identified; the result may be a false positive

NJ - the analyte is tentatively identified and the concentration of the associated result is estimated

U - result is undetected at the detection limit shown

UJ- result is undetected at an estimated detection limit



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 10 LABORATORY  
7411 Beach Dr. East  
Port Orchard, Washington 98366

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MEMORANDUM

SUBJECT: Data Release for Aroclor Analysis Results from the Region 10 Manchester Environmental Laboratory.

PROJECT NAME: Portland Harbor

PROJECT CODE: ESD-101A

FROM: Linda Anderson-Carnahan  
Director

TO: Dana Davoli  
Project Officer

CC: Dave Stone, ODHS  
Chip Humphrey, USEPA  
Tara Martich, USEPA  
Eric Blischke, USEPA  
Joe Goulet, USEPA

I have authorized release of this data package. Attached you will find the aroclor results for the Portland Harbor project for samples collected on 05/22/03 thru 08/27/03. The results for the PAH, pesticide, speciated arsenic and % lipids analyses for this project will follow. For further information regarding the attached data, contact Ginna Grepo-Grove at 206-553-1632. For the schedule for the remaining analyses, contact Gerald Dodo at 360-871-8728.

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**Manchester Environmental Laboratory**  
**Report by Parameter for Project ESD-101A**

Page 1

<b>Project Code:</b>	ESD-101A	<b>Collected:</b>	5/22/03
<b>Project Name:</b>	PORTLAND HARBOR SITE TISSUE	<b>Matrix:</b>	Tissue
<b>Project Officer:</b>	DANA DAVOLI	<b>Sample Number:</b>	03214300
<b>Account Code:</b>	03T10P50102D1000LA00	<b>Type:</b>	Reg sample
<b>Station Description:</b>	PACIFIC LAMPREY (30 FISH COMPOSITE) WB		

		Result	Units	Qlfr
<b>GC</b>				
Parameter	Pesticides - PCB's			
Method	8081/8082 Chlorinated Pesticides and PCB/PCB congeners, SW846, Modified			
Prep Method	3510M/3540			
Analyte(s)	12674112	PCB-1016	4.0	ug/kg U
	11104282	PCB-1221	20	ug/kg U
	11141165	PCB-1232	4.0	ug/kg U
	53469219	PCB-1242	4.0	ug/kg U
	<b>12672296</b>	<b>PCB-1248</b>	<b>15</b>	<b>ug/kg</b>
	<b>11097691</b>	<b>PCB-1254</b>	<b>35</b>	<b>ug/kg J</b>
	11096825	PCB-1260	4.0	ug/kg U
	37324235	PCB-1262	4.0	ug/kg U
	11100144	PCB-1268	4.0	ug/kg U
Surrogate(s)	2051243	PCB Congener 209	110	%Rec
	877098	Tetrachlorometaxylene	95	%Rec

03214300 Reg sample



**Manchester Environmental Laboratory**  
**Report by Parameter for Project ESD-101A**

<b>Project Code:</b>	ESD-101A	<b>Collected:</b>	5/22/03
<b>Project Name:</b>	PORTLAND HARBOR SITE TISSUE	<b>Matrix:</b>	Tissue
<b>Project Officer:</b>	DANA DAVOLI	<b>Sample Number:</b>	03214301
<b>Account Code:</b>	03T10P50102D1000LA00	<b>Type:</b>	Reg sample
<b>Station Description:</b>	PACIFIC LAMPREY (30 FISH COMPOSITE) WB		

		Result	Units	Olfr
<b>GC</b>				
<b>Parameter :</b>	Pesticides - PCB's			
<b>Method :</b>	8081/8082 Chlorinated Pesticides and PCB/PCB congeners, SW846, Modified			
<b>Prep Method :</b>	3510M/3540			
<b>Analyte(s) :</b>	12674112	PCB-1016	3.9	ug/kg U
	11104282	PCB-1221	19	ug/kg U
	11141165	PCB-1232	3.9	ug/kg U
	53469219	PCB-1242	3.9	ug/kg U
	<b>12672296</b>	<b>PCB-1248</b>	<b>14</b>	<b>ug/kg</b>
	<b>11097691</b>	<b>PCB-1254</b>	<b>30</b>	<b>ug/kg</b>
	11096825	PCB-1260	3.9	ug/kg U
	37324235	PCB-1262	3.9	ug/kg U
	11100144	PCB-1268	3.9	ug/kg U
<b>Surrogate(s) :</b>	2051243	PCB Congener 209	110	%Rec
	877098	Tetrachlorometaxylene	83	%Rec

**Manchester Environmental Laboratory**  
**Report by Parameter for Project ESD-101A**

<b>Project Code:</b>	ESD-101A	<b>Collected:</b>	5/22/03
<b>Project Name:</b>	PORTLAND HARBOR SITE TISSUE	<b>Matrix:</b>	Tissue
<b>Project Officer:</b>	DANA DAVOLI	<b>Sample Number:</b>	03214302
<b>Account Code:</b>	03T10P50102D1000LA00	<b>Type:</b>	Reg sample
<b>Station Description:</b>	PACIFIC LAMPREY (30 FISH COMPOSITE) WB		

		Result	Units	Qlfr	
GC					
Parameter	: Pesticides - PCB's				
Method	: 8081/8082	Chlorinated Pesticides and PCB/PCB congeners, SW846, Modified			
Prep Method	: 3510M/3540				
Analyte(s)	: 12674112	PCB-1016	3.8	ug/kg	U
	: 11104282	PCB-1221	19	ug/kg	U
	: 11141165	PCB-1232	3.8	ug/kg	U
	: 53469219	PCB-1242	3.8	ug/kg	U
	: 12672296	PCB-1248	18	ug/kg	
	: 11097691	PCB-1254	22	ug/kg	
	: 11096825	PCB-1260	3.8	ug/kg	U
	: 37324235	PCB-1262	3.8	ug/kg	U
	: 11100144	PCB-1268	3.8	ug/kg	U
Surrogate(s)	: 2051243	PCB Congener 209	100	%Rec	
	: 877098	Tetrachlorometaxylene	85	%Rec	

**Manchester Environmental Laboratory**  
**Report by Parameter for Project ESD-101A**

<b>Project Code:</b>	ESD-101A	<b>Collected:</b>	5/22/03
<b>Project Name:</b>	PORTLAND HARBOR SITE TISSUE	<b>Matrix:</b>	Tissue
<b>Project Officer:</b>	DANA DAVOLI	<b>Sample Number:</b>	03214303
<b>Account Code:</b>	03T10P50102D1000LA00	<b>Type:</b>	Reg sample
<b>Station Description:</b>	PACIFIC LAMPREY (30 FISH COMPOSITE) WB		

		Result	Units	Olfr
<b>GC</b>				
<b>Parameter</b> : Pesticides - PCB's				
<b>Method</b> : 8081/8082 Chlorinated Pesticides and PCB/PCB congeners, SW846, Modified				
<b>Prep Method</b> : 3510M/3540				
<b>Analyte(s)</b> : 12674112		PCB-1016	3.8	ug/kg U
11104282		PCB-1221	19	ug/kg U
11141165		PCB-1232	3.8	ug/kg U
53469219		PCB-1242	3.8	ug/kg U
<b>12672296</b>		<b>PCB-1248</b>	<b>13</b>	<b>ug/kg</b>
<b>11097691</b>		<b>PCB-1254</b>	<b>24</b>	<b>ug/kg</b>
11096825		PCB-1260	3.8	ug/kg U
37324235		PCB-1262	3.8	ug/kg U
11100144		PCB-1268	3.8	ug/kg U
<b>Surrogate(s)</b> : 2051243		PCB Congener 209	96	%Rec
877098		Tetrachlorometaxylene	75	%Rec

**Manchester Environmental Laboratory**  
**Report by Parameter for Project ESD-101A**

<b>Project Code:</b>	ESD-101A	<b>Collected:</b>	6/20/03
<b>Project Name:</b>	PORTLAND HARBOR SITE TISSUE	<b>Matrix:</b>	Tissue
<b>Project Officer:</b>	DANA DAVOLI	<b>Sample Number:</b>	03254200
<b>Account Code:</b>	03T10P50102D1000LA00	<b>Type:</b>	Reg sample
<b>Station Description:</b>	CHINOOK RIGHT SIDE (FILLET W/SKIN ON) 3F		

		Result	Units	Qlfr	
GC					
Parameter	: Pesticides - PCB's				
Method	: 8081/8082	Chlorinated Pesticides and PCB/PCB congeners, SW846, Modified			
Prep Method	: 3510M/3540				
Analyte(s)	: 12674112	PCB-1016	3.9	ug/kg	U
	: 11104282	PCB-1221	20	ug/kg	U
	: 11141165	PCB-1232	3.9	ug/kg	U
	: 53469219	PCB-1242	3.9	ug/kg	U
	: 12672296	PCB-1248	3.9	ug/kg	U
	: 11097691	PCB-1254	3.9	ug/kg	U
	: 11096825	PCB-1260	3.9	ug/kg	U
	: 37324235	PCB-1262	3.9	ug/kg	U
	: 11100144	PCB-1268	3.9	ug/kg	U
Surrogate(s)	: 2051243	PCB Congener 209	110	%Rec	
	: 877098	Tetrachlorometaxylene	75	%Rec	

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**Manchester Environmental Laboratory**  
**Report by Parameter for Project ESD-101A**

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**Project Code:** ESD-101A  
**Project Name:** PORTLAND HARBOR SITE TISSUE  
**Project Officer:** DANA DAVOLI  
**Account Code:** 03T10P50102D1000LA00  
**Station Description:**

**Collected:**  
**Matrix:** Tissue  
**Sample Number:** 03254200  
**Type:** Matrix Spike

		Result	Units	Qlfr
GC				
Parameter	: Pesticides - PCB's			
Method	: 8081/8082	Chlorinated Pesticides and PCB/PCB congeners, SW846, Modified		
Prep Method	: 3510M/3540			
Surrogate(s)	: 2051243	PCB Congener 209	98	%Rec
	: 11096825	PCB-1260	87	%Rec
	: 877098	Tetrachlorometaxylene	86	%Rec

03254200 Matrix Spike

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**Manchester Environmental Laboratory**  
**Report by Parameter for Project ESD-101A**

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**Project Code:** ESD-101A  
**Project Name:** PORTLAND HARBOR SITE TISSUE  
**Project Officer:** DANA DAVOLI  
**Account Code:** 03T10P50102D1000LA00  
**Station Description:**

**Collected:**  
**Matrix:** Tissue  
**Sample Number:** 03254200  
**Type:** Matrix Spike Dupl

		Result	Units	Qlfr
<b>GC</b>				
<b>Parameter</b>	: Pesticides - PCB's			
<b>Method</b>	: 8081/8082	Chlorinated Pesticides and PCB/PCB congeners, SW846, Modified		
<b>Prep Method</b>	: 3510M/3540			
<b>Surrogate(s)</b>	: 2051243	PCB Congener 209	100	%Rec
	: 11096825	PCB-1260	91	%Rec
	: 877098	Tetrachlorometaxylene	89	%Rec

**Manchester Environmental Laboratory**  
**Report by Parameter for Project ESD-101A**

<b>Project Code:</b>	ESD-101A	<b>Collected:</b>	6/20/03
<b>Project Name:</b>	PORTLAND HARBOR SITE TISSUE	<b>Matrix:</b>	Tissue
<b>Project Officer:</b>	DANA DAVOLI	<b>Sample Number:</b>	03254201
<b>Account Code:</b>	03T10P50102D1000LA00	<b>Type:</b>	Reg sample
<b>Station Description:</b>	CHINOOK RIGHT SIDE (FILLET W/SKIN ON) 3F		

		Result	Units	Qlfr	
GC					
Parameter	: Pesticides - PCB's				
Method	: 8081/8082	Chlorinated Pesticides and PCB/PCB congeners, SW846, Modified			
Prep Method	: 3510M/3540				
Analyte(s)	: 12674112	PCB-1016	3.9	ug/kg	U
	11104282	PCB-1221	20	ug/kg	U
	11141165	PCB-1232	3.9	ug/kg	U
	53469219	PCB-1242	3.9	ug/kg	U
	12672296	PCB-1248	3.9	ug/kg	U
	11097691	PCB-1254	10	ug/kg	U
	11096825	PCB-1260	3.9	ug/kg	U
	37324235	PCB-1262	3.9	ug/kg	U
	11100144	PCB-1268	3.9	ug/kg	U
Surrogate(s)	: 2051243	PCB Congener 209	84	%Rec	
	877098	Tetrachlorometaxylene	100	%Rec	

**Manchester Environmental Laboratory**  
**Report by Parameter for Project ESD-101A**

<b>Project Code:</b>	ESD-101A	<b>Collected:</b>	6/20/03
<b>Project Name:</b>	PORTLAND HARBOR SITE TISSUE	<b>Matrix:</b>	Tissue
<b>Project Officer:</b>	DANA DAVOLI	<b>Sample Number:</b>	03254202
<b>Account Code:</b>	03T10P50102D1000LA00	<b>Type:</b>	Reg sample
<b>Station Description:</b>	CHINOOK RIGHT SIDE (FILLET W/SKIN ON) 3F		

		Result	Units	Qlfr	
GC					
Parameter	: Pesticides - PCB's				
Method	: 8081/8082 Chlorinated Pesticides and PCB/PCB congeners, SW846, Modified				
Prep Method	: 3510M/3540				
Analyte(s)	12674112	PCB-1016	3.9	ug/kg	U
	11104282	PCB-1221	19	ug/kg	U
	11141165	PCB-1232	3.9	ug/kg	U
	53469219	PCB-1242	3.9	ug/kg	U
	12672296	PCB-1248	3.9	ug/kg	U
	11097691	PCB-1254	5.3	ug/kg	U
	11096825	PCB-1260	3.9	ug/kg	U
	37324235	PCB-1262	3.9	ug/kg	U
	11100144	PCB-1268	3.9	ug/kg	U
Surrogate(s)	2051243	PCB Congener 209	75	%Rec	
	877098	Tetrachlorometaxylen	68	%Rec	



**Manchester Environmental Laboratory**  
**Report by Parameter for Project ESD-101A**

<b>Project Code:</b>	ESD-101A	<b>Collected:</b>	6/20/03
<b>Project Name:</b>	PORTLAND HARBOR SITE TISSUE	<b>Matrix:</b>	Tissue
<b>Project Officer:</b>	DANA DAVOLI	<b>Sample Number:</b>	03254220
<b>Account Code:</b>	03T10P50102D1000LA00	<b>Type:</b>	Reg sample
<b>Station Description:</b>	CHINOOK WHOLE BODY 3 FISH COMPOSITE		

		Result	Units	Qlfr	
GC					
Parameter	: Pesticides - PCB's				
Method	: 8081/8082	Chlorinated Pesticides and PCB/PCB congeners, SW846, Modified			
Prep Method	: 3510M/3540				
Analyte(s)	: 12674112	PCB-1016	3.8	ug/kg	U
	11104282	PCB-1221	19	ug/kg	U
	11141165	PCB-1232	3.8	ug/kg	U
	53469219	PCB-1242	3.8	ug/kg	U
	12672296	PCB-1248	3.8	ug/kg	U
	11097691	PCB-1254	10	ug/kg	U
	11096825	PCB-1260	3.8	ug/kg	U
	37324235	PCB-1262	3.8	ug/kg	U
	11100144	PCB-1268	3.8	ug/kg	U
Surrogate(s)	: 2051243	PCB Congener 209	65	%Rec	
	877098	Tetrachlorometaxylene	91	%Rec	

**Manchester Environmental Laboratory**  
**Report by Parameter for Project ESD-101A**

<b>Project Code:</b>	ESD-101A	<b>Collected:</b>	6/20/03
<b>Project Name:</b>	PORTLAND HARBOR SITE TISSUE	<b>Matrix:</b>	Tissue
<b>Project Officer:</b>	DANA DAVOLI	<b>Sample Number:</b>	03254221
<b>Account Code:</b>	03T10P50102D1000LA00	<b>Type:</b>	Reg sample
<b>Station Description:</b>	CHINOOK WHOLE BODY 3 FISH COMPOSITE		

		Result	Units	Qlfr	
GC					
Parameter	: Pesticides - PCB's				
Method	: 8081/8082	Chlorinated Pesticides and PCB/PCB congeners, SW846, Modified			
Prep Method	: 3510M/3540				
Analyte(s)	12674112	PCB-1016	3.9	ug/kg	U
	11104282	PCB-1221	20	ug/kg	U
	11141165	PCB-1232	3.9	ug/kg	U
	53469219	PCB-1242	3.9	ug/kg	U
	12672296	PCB-1248	3.9	ug/kg	U
	11097691	PCB-1254	10	ug/kg	U
	11096825	PCB-1260	3.9	ug/kg	U
	37324235	PCB-1262	3.9	ug/kg	U
	11100144	PCB-1268	3.9	ug/kg	U
Surrogate(s)	2051243	PCB Congener 209	56	%Rec	
	877098	Tetrachlorometaxylene	75	%Rec	

**Manchester Environmental Laboratory**  
**Report by Parameter for Project ESD-101A**

<b>Project Code:</b>	ESD-101A	<b>Collected:</b>	6/20/03
<b>Project Name:</b>	PORTLAND HARBOR SITE TISSUE	<b>Matrix:</b>	Tissue
<b>Project Officer:</b>	DANA DAVOLI	<b>Sample Number:</b>	03254222
<b>Account Code:</b>	03T10P50102D1000LA00	<b>Type:</b>	Reg sample
<b>Station Description:</b>	CHINOOK WHOLE BODY 3 FISH COMPOSITE		

		Result	Units	Qlfr	
GC					
Parameter	: Pesticides - PCB's				
Method	: 8081/8082	Chlorinated Pesticides and PCB/PCB congeners, SW846, Modified			
Prep Method	: 3510M/3540				
Analyte(s)	: 12674112	PCB-1016	3.9	ug/kg	U
	: 11104282	PCB-1221	19	ug/kg	U
	: 11141165	PCB-1232	3.9	ug/kg	U
	: 53469219	PCB-1242	3.9	ug/kg	U
	: 12672296	PCB-1248	3.9	ug/kg	U
	: 11097691	PCB-1254	10	ug/kg	U
	: 11096825	PCB-1260	3.9	ug/kg	U
	: 37324235	PCB-1262	3.9	ug/kg	U
	: 11100144	PCB-1268	3.9	ug/kg	U
Surrogate(s)	: 2051243	PCB Congener 209	74	%Rec	
	: 877098	Tetrachlorometaxylene	110	%Rec	

**Manchester Environmental Laboratory**  
**Report by Parameter for Project ESD-101A**

<b>Project Code:</b>	ESD-101A	<b>Collected:</b>	6/20/03
<b>Project Name:</b>	PORTLAND HARBOR SITE TISSUE	<b>Matrix:</b>	Tissue
<b>Project Officer:</b>	DANA DAVOLI	<b>Sample Number:</b>	03254223
<b>Account Code:</b>	03T10P50102D1000LA00	<b>Type:</b>	Reg sample
<b>Station Description:</b>	CHINOOK WHOLE BODY 3 FISH COMPOSITE		

		Result	Units	Qlfr	
GC					
Parameter	: Pesticides - PCB's				
Method	: 8081/8082	Chlorinated Pesticides and PCB/PCB congeners, SW846, Modified			
Prep Method	: 3510M/3540				
Analyte(s)	12674112	PCB-1016	3.9	ug/kg	U
	11104282	PCB-1221	20	ug/kg	U
	11141165	PCB-1232	3.9	ug/kg	U
	53469219	PCB-1242	3.9	ug/kg	U
	12672296	PCB-1248	3.9	ug/kg	U
	11097691	PCB-1254	3.9	ug/kg	U
	11096825	PCB-1260	3.9	ug/kg	U
	37324235	PCB-1262	3.9	ug/kg	U
	11100144	PCB-1268	3.9	ug/kg	U
Surrogate(s)	2051243	PCB Congener 209	54	%Rec	
	877098	Tetrachlorometaxylene	120	%Rec	

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**Manchester Environmental Laboratory**  
**Report by Parameter for Project ESD-101A**

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<b>Project Code:</b>	ESD-101A	<b>Collected:</b>	6/20/03
<b>Project Name:</b>	PORTLAND HARBOR SITE TISSUE	<b>Matrix:</b>	Tissue
<b>Project Officer:</b>	DANA DAVOLI	<b>Sample Number:</b>	03254224
<b>Account Code:</b>	03T10P50102D1000LA00	<b>Type:</b>	Reg sample
<b>Station Description:</b>	CHINOOK WHOLE BODY 3 FISH COMPOSITE		

		Result	Units	Qlfr	
GC					
Parameter	: Pesticides - PCB's				
Method	: 8081/8082	Chlorinated Pesticides and PCB/PCB congeners, SW846, Modified			
Prep Method	: 3510M/3540				
Analyte(s)	12674112	PCB-1016	3.9	ug/kg	U
	11104282	PCB-1221	19	ug/kg	U
	11141165	PCB-1232	3.9	ug/kg	U
	53469219	PCB-1242	3.9	ug/kg	U
	12672296	PCB-1248	3.9	ug/kg	U
	11097691	PCB-1254	10	ug/kg	U
	11096825	PCB-1260	3.9	ug/kg	U
	37324235	PCB-1262	3.9	ug/kg	U
	11100144	PCB-1268	3.9	ug/kg	U
Surrogate(s)	2051243	PCB Congener 209	54	%Rec	
	877098	Tetrachlorometaxylene	72	%Rec	

03254224 Reg sample

**Manchester Environmental Laboratory**  
**Report by Parameter for Project ESD-101A**

<b>Project Code:</b>	ESD-101A	<b>Collected:</b>	8/13/03
<b>Project Name:</b>	PORTLAND HARBOR SITE TISSUE	<b>Matrix:</b>	Tissue
<b>Project Officer:</b>	DANA DAVOLI	<b>Sample Number:</b>	03334750
<b>Account Code:</b>	03T10P50102D1000LA00	<b>Type:</b>	Reg sample
<b>Station Description:</b>	STURGEON FILLET W/O SKIN L6017-17		

		Result	Units	Qlfr	
GC					
Parameter	: Pesticides - PCB's				
Method	: 8081/8082	Chlorinated Pesticides and PCB/PCB congeners, SW846, Modified			
Prep Method	: 3510M/3540				
Analyte(s)	12674112	PCB-1016	3.9	ug/kg	U
	11104282	PCB-1221	20	ug/kg	U
	11141165	PCB-1232	3.9	ug/kg	U
	53469219	PCB-1242	3.9	ug/kg	U
	12672296	PCB-1248	12	ug/kg	
	11097691	PCB-1254	23	ug/kg	
	11096825	PCB-1260	15	ug/kg	
	37324235	PCB-1262	3.9	ug/kg	U
	11100144	PCB-1268	3.9	ug/kg	U
Surrogate(s)	2051243	PCB Congener 209	85	%Rec	
	877098	Tetrachlorometaxylene	70	%Rec	

**Manchester Environmental Laboratory**  
**Report by Parameter for Project ESD-101A**

**Project Code:** ESD-101A  
**Project Name:** PORTLAND HARBOR SITE TISSUE  
**Project Officer:** DANA DAVOLI  
**Account Code:** 03T10P50102D1000LA00  
**Station Description:** STURGEON FILLET W/O SKIN L6017-19

**Collected:** 8/14/03  
**Matrix:** Tissue  
**Sample Number:** 03334751  
**Type:** Reg sample

		Result	Units	Qlfr	
GC					
Parameter	: Pesticides - PCB's				
Method	: 8081/8082	Chlorinated Pesticides and PCB/PCB congeners, SW846, Modified			
Prep Method	: 3510M/3540				
Analyte(s)	: 12674112	PCB-1016	3.9	ug/kg	U
	11104282	PCB-1221	19	ug/kg	U
	11141165	PCB-1232	3.9	ug/kg	U
	53469219	PCB-1242	3.9	ug/kg	U
	12672296	PCB-1248	8.2	ug/kg	
	11097691	PCB-1254	14	ug/kg	J
	11096825	PCB-1260	9.7	ug/kg	
	37324235	PCB-1262	3.9	ug/kg	U
	11100144	PCB-1268	3.9	ug/kg	U
Surrogate(s)	: 2051243	PCB Congener 209	94	%Rec	
	877098	Tetrachlorometaxylene	88	%Rec	

**Manchester Environmental Laboratory**  
**Report by Parameter for Project ESD-101A**

<b>Project Code:</b>	ESD-101A	<b>Collected:</b>	8/27/03
<b>Project Name:</b>	PORTLAND HARBOR SITE TISSUE	<b>Matrix:</b>	Tissue
<b>Project Officer:</b>	DANA DAVOLI	<b>Sample Number:</b>	03354100
<b>Account Code:</b>	03T10P50102D1000LA00	<b>Type:</b>	Reg sample
<b>Station Description:</b>	STURGEON FILLET W/O SKIN L6017-20		

		Result	Units	Qlfr	
GC					
Parameter	: Pesticides - PCB's				
Method	: 8081/8082 Chlorinated Pesticides and PCB/PCB congeners, SW846, Modified				
Prep Method	: 3510M/3540				
Analyte(s)	12674112	PCB-1016	4.0	ug/kg	U
	11104282	PCB-1221	20	ug/kg	U
	11141165	PCB-1232	4.0	ug/kg	U
	53469219	PCB-1242	4.0	ug/kg	U
	12672296	PCB-1248	26	ug/kg	
	11097691	PCB-1254	58	ug/kg	
	11096825	PCB-1260	38	ug/kg	
	37324235	PCB-1262	4.0	ug/kg	U
	11100144	PCB-1268	4.0	ug/kg	U
Surrogate(s)	2051243	PCB Congener 209	88	%Rec	
	877098	Tetrachlorometaxylen	69	%Rec	



**Manchester Environmental Laboratory**  
**Report by Parameter for Project ESD-101A**

<b>Project Code:</b>	ESD-101A	<b>Collected:</b>	8/27/03
<b>Project Name:</b>	PORTLAND HARBOR SITE TISSUE	<b>Matrix:</b>	Tissue
<b>Project Officer:</b>	DANA DAVOLI	<b>Sample Number:</b>	03354101
<b>Account Code:</b>	03T10P50102D1000LA00	<b>Type:</b>	Reg sample
<b>Station Description:</b>	STURGEON FILLET W/O SKIN L6017-21		

		Result	Units	Qlfr	
GC					
Parameter	: Pesticides - PCB's				
Method	: 8081/8082	Chlorinated Pesticides and PCB/PCB congeners, SW846, Modified			
Prep Method	: 3510M/3540				
Analyte(s)	: 12674112	PCB-1016	3.9	ug/kg	U
	: 11104282	PCB-1221	19	ug/kg	U
	: 11141165	PCB-1232	3.9	ug/kg	U
	: 53469219	PCB-1242	3.9	ug/kg	U
	: 12672296	PCB-1248	3.9	ug/kg	U
	: 11097691	PCB-1254	3.9	ug/kg	U
	: 11096825	PCB-1260	4.2	ug/kg	J
	: 37324235	PCB-1262	3.9	ug/kg	U
	: 11100144	PCB-1268	3.9	ug/kg	U
Surrogate(s)	: 2051243	PCB Congener 209	55	%Rec	
	: 877098	Tetrachlorometaxylene	36	%Rec	

**Manchester Environmental Laboratory**  
**Report by Parameter for Project ESD-101A**

<b>Project Code:</b>	ESD-101A	<b>Collected:</b>	8/27/03
<b>Project Name:</b>	PORTLAND HARBOR SITE TISSUE	<b>Matrix:</b>	Tissue
<b>Project Officer:</b>	DANA DAVOLI	<b>Sample Number:</b>	03354102
<b>Account Code:</b>	03T10P50102D1000LA00	<b>Type:</b>	Reg sample
<b>Station Description:</b>	STURGEON FILLET W/O SKIN L6017-22		

		Result	Units	Qlfr	
GC					
Parameter	: Pesticides - PCB's				
Method	: 8081/8082	Chlorinated Pesticides and PCB/PCB congeners, SW846, Modified			
Prep Method	: 3510M/3540				
Analyte(s)	12674112	PCB-1016	3.9	ug/kg	U
	11104282	PCB-1221	20	ug/kg	U
	11141165	PCB-1232	3.9	ug/kg	U
	53469219	PCB-1242	3.9	ug/kg	U
	12672296	PCB-1248	3.9	ug/kg	U
	11097691	PCB-1254	3.9	ug/kg	U
	11096825	PCB-1260	110	ug/kg	
	37324235	PCB-1262	3.9	ug/kg	U
	11100144	PCB-1268	3.9	ug/kg	U
Surrogate(s)	2051243	PCB Congener 209	100	%Rec	
	877098	Tetrachlorometaxylene	85	%Rec	

**Manchester Environmental Laboratory**  
**Report by Parameter for Project ESD-101A**

**Project Code:** ESD-101A  
**Project Name:** PORTLAND HARBOR SITE TISSUE  
**Project Officer:** DANA DAVOLI  
**Account Code:** 03T10P50102D1000LA00  
**Station Description:** STURGEON FILLET W/O SKIN L6017-18

**Collected:** 8/27/03  
**Matrix:** Tissue  
**Sample Number:** 03354103  
**Type:** Reg sample

		Result	Units	Qlfr	
GC					
Parameter	: Pesticides - PCB's				
Method	: 8081/8082	Chlorinated Pesticides and PCB/PCB congeners, SW846, Modified			
Prep Method	: 3510M/3540				
Analyte(s)	12674112	PCB-1016	3.9	ug/kg	U
	11104282	PCB-1221	19	ug/kg	U
	11141165	PCB-1232	3.9	ug/kg	U
	53469219	PCB-1242	3.9	ug/kg	U
	12672296	PCB-1248	9.0	ug/kg	U
	11097691	PCB-1254	15	ug/kg	U
	11096825	PCB-1260	14	ug/kg	
	37324235	PCB-1262	3.9	ug/kg	U
	11100144	PCB-1268	3.9	ug/kg	U
Surrogate(s)	2051243	PCB Congener 209	89	%Rec	
	877098	Tetrachlorometaxylene	58	%Rec	

**Manchester Environmental Laboratory**  
**Report by Parameter for Project ESD-101A**

**Project Code:** ESD-101A  
**Project Name:** PORTLAND HARBOR SITE TISSUE  
**Project Officer:** DANA DAVOLI  
**Account Code:** 03T10P50102D1000LA00  
**Station Description:**

**Collected:**  
**Matrix:** Tissue  
**Sample Number:** OBT4057A1  
**Type:** Blank

			Result	Units	Qlfr
<b>GC</b>					
<b>Parameter</b>	: Pesticides - PCB's				
<b>Method</b>	: 8081/8082 Chlorinated Pesticides and PCB/PCB congeners, SW846, Modified				
<b>Prep Method</b>	: 3510M/3540				
<b>Analyte(s)</b>	12674112	PCB-1016	4.0	ug/kg	U
	11104282	PCB-1221	20.0	ug/kg	U
	11141165	PCB-1232	4.0	ug/kg	U
	53469219	PCB-1242	4.0	ug/kg	U
	12672296	PCB-1248	4.0	ug/kg	U
	11097691	PCB-1254	4.0	ug/kg	U
	11096825	PCB-1260	4.0	ug/kg	U
	37324235	PCB-1262	4.0	ug/kg	U
	11100144	PCB-1268	4.0	ug/kg	U
<b>Surrogate(s)</b>	2051243	PCB Congener 209	99	%Rec	
	877098	Tetrachlorometaxylene	54	%Rec	



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**

**REGION 10**

1200 Sixth Avenue  
Seattle, Washington 98101

May 6, 2004

Reply to

Attn of:

MGREPOGR  
OEA-095

**MEMORANDUM**

**Subject:** Data Validation Report for Polychlorinated Biphenyl (PCB) Aroclor Analysis of Chinook Salmon, Pacific Lamprey and Sturgeon Fish Tissue Samples from Portland Harbor - Oregon Dept. of Human Services, EPA and ATSDR Project

**From:** Ginna Grepo-Grove, Chemist  
Quality Assurance Office

**To:** Dave Stone, Project Manager  
ODHS/ATSDR

**CC:** Chip Humphrey, RPM, USEPA, ECL  
Tara Martich, RPM, USEPA, ECL  
Eric Blischke, RPM, USEPA, ECL  
Dana Davoli, Human Health Risk Assessment, USEPA  
Joe Goulet, Ecological Risk Assessment, USEPA

The quality assurance (QA) review of the results from the analysis of 18 fish tissue samples collected from the above referenced site has been completed. These samples were analyzed for PCB Aroclors in accordance with Method 8082, "Polychlorinated Biphenyls (PCBs) by Gas Chromatography" taken from the EPA- SW846 document "Test methods for Evaluating Solid Wastes Physical/Chemical Methods." The analyses were performed by the Environmental Services Assistance Team (ESAT) contractor at the USEPA Manchester Environmental Laboratory (MEL) located at Port Orchard, WA. The following tissue samples were reviewed in this report:

EPA's Sample Number	Species	Sample Collection Date (EPA & ODFW)	Sample Location
03254220	Chinook -Whole Body	6/20/03	Clackamas Fish Hatchery
03254221	Chinook -Whole Body	6/20/03	Clackamas Fish Hatchery
03254222	Chinook -Whole Body	6/20/03	Clackamas Fish Hatchery
03254223	Chinook- Whole Body	6/20/03	Clackamas Fish Hatchery
03254224	Chinook-Whole Body (blind duplicate of sample 03254223)	6/20/03	Clackamas Fish Hatchery
03254200	Chinook Right Fillet -Skin On	6/20/03	Clackamas Fish Hatchery

03254201	Chinook Right Fillet -Skin On	6/20/03	Clackamas Fish Hatchery
03254202	Chinook Right Fillet -Skin On	6/20/03	Clackamas Fish Hatchery
03354100	Sturgeon Fillet Skin Off	8/27/03	River Mi. 3.5 to 9.2
03354101	Sturgeon Fillet Skin Off	8/27/03	River Mi. 3.5 to 9.2
03354102	Sturgeon Fillet Skin Off	8/27/03	River Mi. 3.5 to 9.2
03354103	Sturgeon Fillet Skin Off (blind duplicate of sample 03334750)	8/27/03	River Mi. 3.5 to 9.2
03334750	Sturgeon Fillet Skin Off	8/13/03	River Mi. 3.5 to 9.2
03334751	Sturgeon Fillet Skin Off	8/19/03	River Mi. 3.5 to 9.2
03354300	Composite Pacific Lamprey 1	5/22/03	Willamette Falls
03354301	Composite Pacific Lamprey 2	5/22/03	Willamette Falls
03354302	Composite Pacific Lamprey 3	5/22/03	Willamette Falls
03354303	Composite Pacific Lamprey 4	5/22/03	Willamette Falls

## DATA QUALIFICATIONS

The following comments refer to the laboratory performance in meeting the Quality Control Specifications outlined in the Quality Assurance Project Plan and the technical specifications of the EPA SW846 Method 8082 and the Functional Guidelines for Organic Data review.

The conclusions presented herein are based on the information provided for the review.

### Sample Homogenization and Condition upon Receipt

Axys Analytical Services (Axys) homogenized all of the tissue samples, distributed the aliquots and shipped them to MEL for subsequent analysis. The tissue samples were received at MEL frozen. The temperature blank in each cooler registered surface temperatures ranging from 2- 4 °C. There were no problems encountered during sample receipt.

### Holding Time - Acceptable

Each of the samples was stored in glass jars, frozen at -20C in individual Ziploc bags until extraction and analysis. All of the samples met both the extraction and analytical holding times criteria specified in the QAPP and the methods for each suite of parameters. None of the data were qualified on this basis.

### Sample Preparation

All of the samples were prepared in accordance with the methods/SOPs specified in the QAPP. The samples were extracted following SW846 Method 3545 (Accelerated Solvent Extraction techniques) and all of the PCB extracts underwent a clean-up step following SW846 Method 3620 prior to GC analysis. In some cases, additional clean-up steps and multiple analyses were employed by the lab to remove interferences and achieve lower reporting limits. None of the data were qualified on this basis.

### **Target Compounds and Reporting Limits**

All of the target compounds were reported on a wet-weight basis and were adjusted for sample amounts extracted and dilution factors. Reporting limits were calculated based on the lowest concentration of standard analyzed during the instrument's initial calibration. In some cases, reporting limits had to be raised due to chromatographic interferences.

### **Instrument Performance**

All of the instruments used in the analyses met the instrument performance criteria, the calibration requirements, the established retention time (RT) windows and the analytical sequence specified by the analytical methods. All of the samples were analyzed during an acceptable analytical period and the instruments used remained stable throughout the course of analyses as indicated by the QC standards analyzed at the end of each period. None of the data were qualified on this basis.

### **Initial Calibrations - Acceptable**

The initial calibrations performed for each suite of parameters met the technical acceptance criteria and the required frequency of analysis specified in the analytical methods. The initial calibrations included the analysis of at least one low standard at the laboratory's Method Reporting Limit (MRL). None of the data were qualified on this basis.

Five concentration levels of Aroclors 1016, 1260 1254, 1248, 1232, 1242 and surrogates were analyzed for the initial calibration. The other target Aroclors (1221, 1262 and 1268) were analyzed at one concentration level. The frequency of analysis, the concentration levels, the percent relative standard deviations (%RSDs), the minimum response factors, and RT criteria set by the method were met by the initial calibration performed for the two columns (RTX-35MS and DB-LXB).

### **Continuing Calibrations - Acceptable**

All of the continuing calibration verification standards (CCVs) associated with the samples met the criteria for frequency of analysis, the applicable recovery criteria, ion abundance ratios, RT windows, chromatographic resolutions, percent differences (%D) and/or relative percent differences (RPDs) between the initial calibration's mean and daily instrument response or calibration factors. None of the data were qualified on this basis.

### **Compound Identification and Quantitation**

All of the target compounds detected met the method-specified technical acceptance criteria and were judged to be acceptable. A mixture of weathered PCB Aroclors was detected in most of the samples and complete isolation of peaks for pattern recognition and quantitation was difficult to achieve. The same peaks, however, were not used in each Aroclor concentration calculation. Detected Aroclors in the samples with percent differences (%D)  $\leq 30\%$  between the two columns were averaged and the mean concentrations reported by the lab. For Aroclor detections with  $>30\%$  Ds between the two column values, the lower value was reported and flagged as estimated, "J," by the reviewer.

#### **Blanks - Acceptable**

The frequency of analysis of laboratory blanks was met. Target compounds were not detected in any of the blanks analyzed. None of the data were qualified on this basis.

#### **Surrogate Recoveries**

The surrogates used in the analyses were tetrachloro-m-xylene (TCX) and decachlorobiphenyl (DCB). All of the samples and QC samples met the PCB project-required surrogate recovery limits. None of the data were qualified on this basis. (see Table A7-7 of the QAPP).

#### **Matrix Spike and Matrix Spike Duplicate (MS/MSD) - Acceptable**

Sample 03254200 was utilized for MS/MSD analyses. This QC sample was spiked with a known concentration of Aroclors 1260. The frequency of analysis, the MS/MSD recoveries and RPDs were within the project-required control limits. None of the data were qualified on this basis.

#### **Field Duplicate Sample Analyses - Acceptable**

Sample 03254224 was submitted as a blind duplicate of the whole body Chinook sample 03254223. Sample 03354103 is a blind duplicate of the filleted Sturgeon sample 03334750. The relative percent differences of the detected results for both the samples and duplicates met the QAPP criterion of  $\leq 50$ . None of the data were qualified on this basis.

#### **Analytical Sequence - Acceptable**

All of the standards, blanks, samples and QC samples for each suite of parameters were analyzed in accordance with the method specified analytical sequence. None of the data were qualified on this basis.

#### **Laboratory Contact**

The laboratory was not contacted for this review.

#### **Overall Assessment**

There were no significant problems encountered in this validation. All of the samples were analyzed in accordance with the method, SOP and QAPP specifications. The data, as qualified, can be used for all purposes.



Data Qualifiers		
	U	The analyte was not detected at or above the reported numeric result.
	J	The analyte was positively identified. The associated numerical result is an estimate.
	UJ	The analyte was not detected at or above the reported estimated result. The associated numerical value is an estimate of the quantitation limit of the analyte in this sample.
	R	The data are unusable for all purposes.
	N	There is evidence the analyte is present in this sample.
	JN	There is evidence that the analyte is present. The associated numerical result is an estimate.